DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs from the side.
2. Remove 5 metal screws holding the rear cover. Remove the rear cover.
3. Remove 5 metal screws holding the cabinet front. Remove the front.
4. Remove 2 metal screws holding the antenna terminal board.
5. Remove 11 metal screws holding chassis to cabinet.
6. Remove the chassis from the front.

MODEL P17D21 (Ch.16F1)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Admiral	MODELS	CHASSIS
		P17D21, P17D22, P17D23, P17D24	16F1
		PA17D21, PA17D22, PA17D23, PA17D24	16AF1
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	Television Receiver		
TUBES	Sixteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 150 Watts, 1.3 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF,	Video IF 45.75MC. Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 metal screws holding the cabinet front. Remove the front. NOTE. Use only mild soap or detergent to clean the safety glass.

SUPER RANGE FINDER ADJUSTMENT

The super range finder (R7) is adjusted to improve reception in fringe areas and areas where interference is present. The super range finder control should be turned fully counter clockwise and left there if satisfactory pictures can be obtained in this position.
Where the signal strength is weak, turn the control clockwise until the picture is satisfactory. White flashes and snow can sometimes be minimized by carefully adjusting the super range finder.
Keep this control set as far counter clockwise as far as possible consistent with satisfactory pictures to prevent overloading or excessive contrast.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSE DEVICE

A 5Ω fusible resistor (R96) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H376

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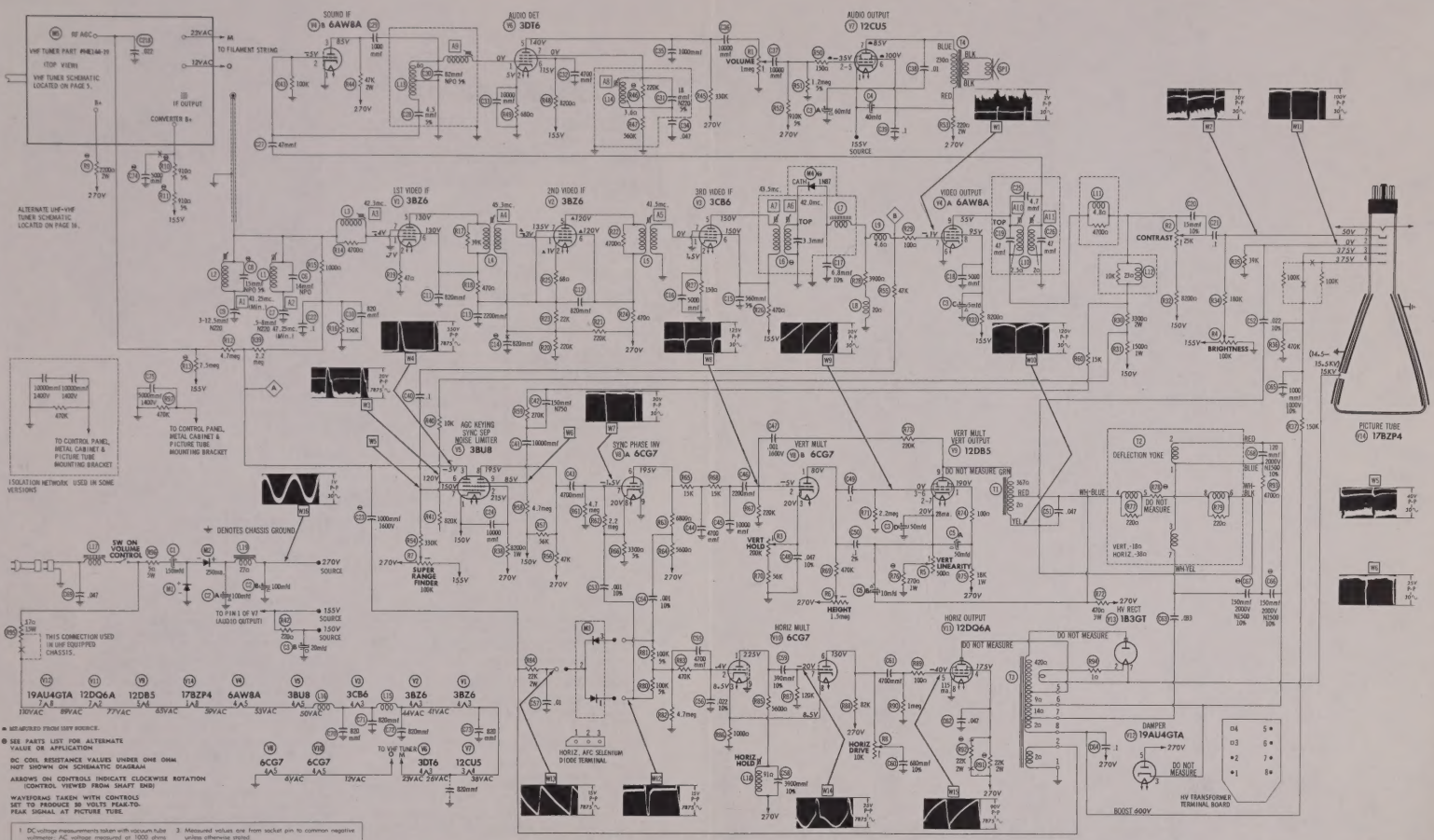


● MEASURED FROM 117V SOURCE.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

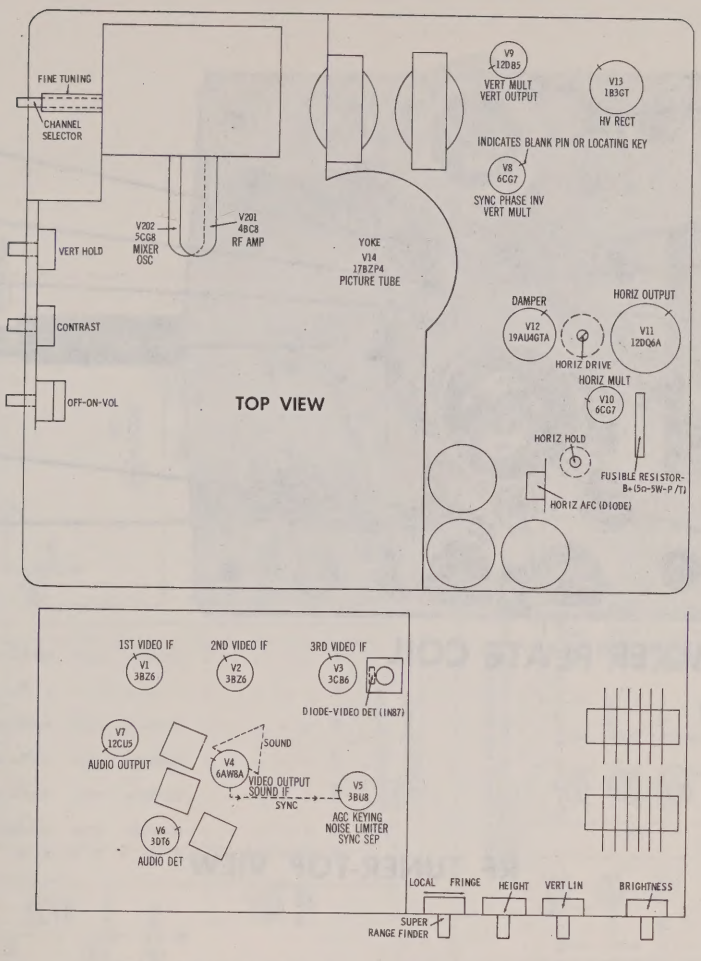
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ADMIRAL CHASSIS
16F1, 16AF1

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

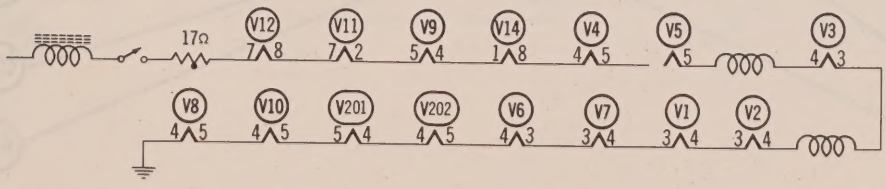
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R96), Rectifier (M1, M2), V7**

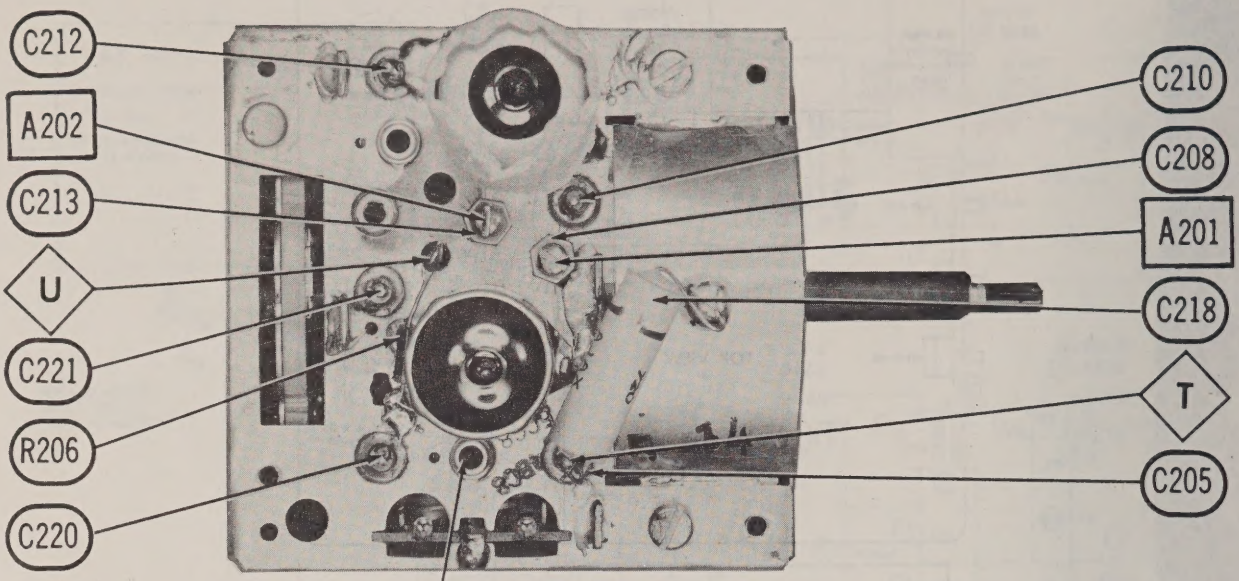
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, V3, Diode (M4), V4, V7**
No pic, no sound, has snow - **V201, V202, V1, V7**
No pic, has sound, has raster - **V4, V14, V7**
Has pic, no sound - **V4, V6, V7**
Overloaded picture - **V5, V7**

SYNC FAILURE
No vert. sync - **V5, V8, V7**
No horiz. sync - **V5, V8, Rectifier (M3), V7**
No vert. or horiz. sync - **V5, V8, V7**

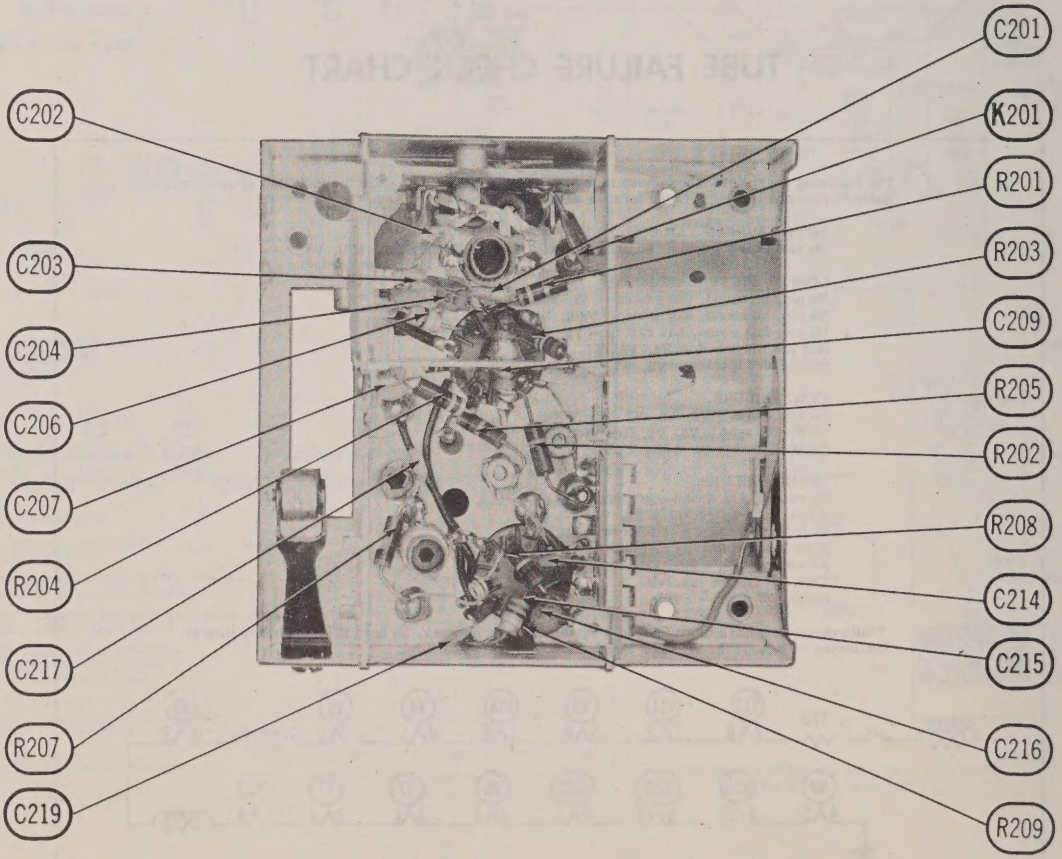
SWEEP FAILURE
No raster, has sound - **M3, V10, V11, V12, V13, V14, V7**
No vertical deflection - **V8, V9**
Poor vert. linearity or foldover - **V8, V9**
Poor horiz. linearity or foldover - **V10, V11, V12**
Narrow picture - **V10, V11, V12, M1, M2**
Vert. off freq. - **V8, V9**
Horiz. off freq. - **V10**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).

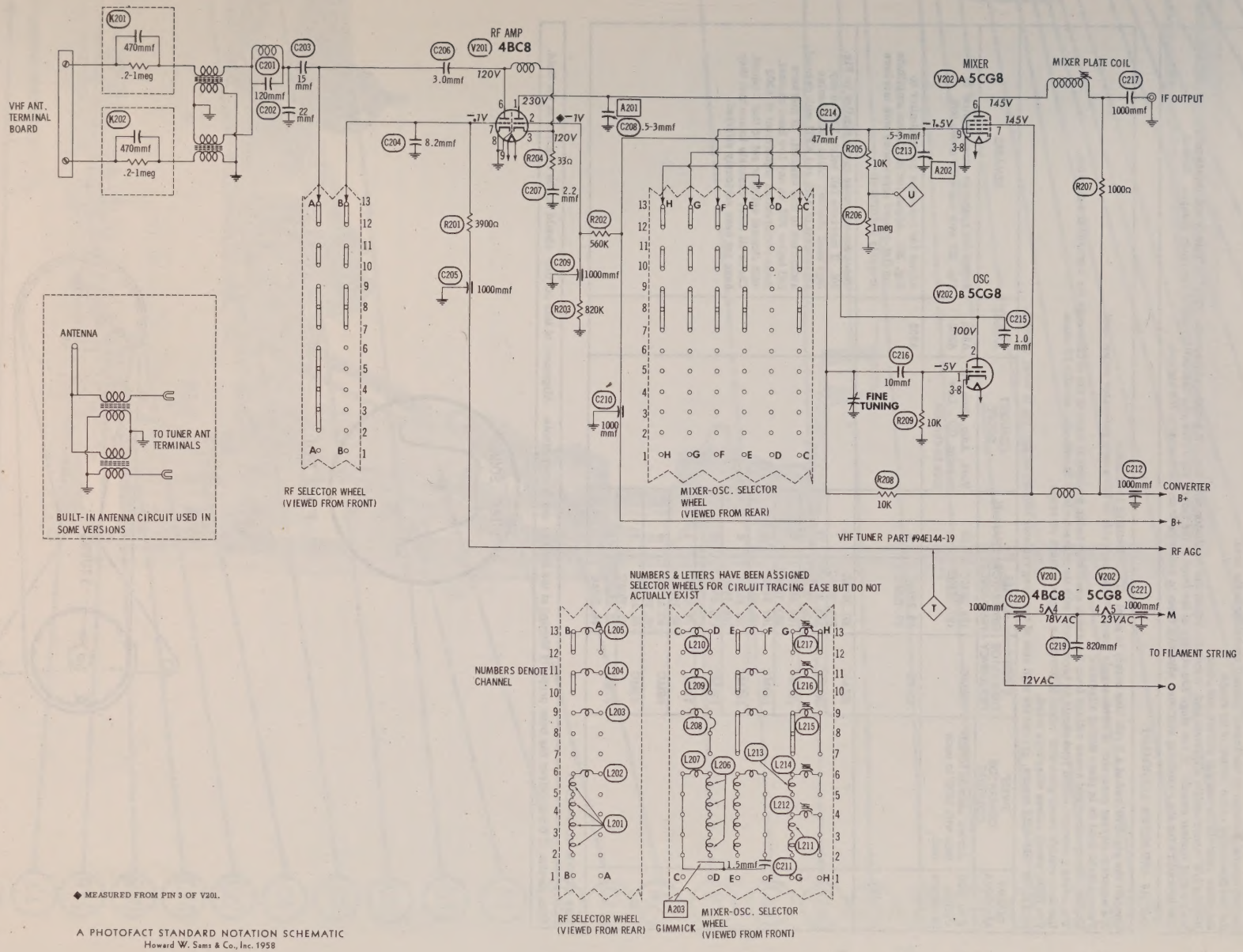




RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



◆ MEASURED FROM PIN 3 OF V201.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUNER SCHEMATIC

ADMIRAL CHASSIS 16F1, 16AF1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.

VHF OSCILLATOR ALIGNMENT

Turn the set on and allow 15 to 20 minutes warm-up period.
Set the channel selector to the lowest channel operating in the area.
Set the fine tuning to the center of its range.
Set other controls for normal picture and sound.
Using a 1/8" non-metallic alignment tool, carefully adjust the oscillator slug for best picture and sound. (NOTE: This is not necessarily the point of loudest sound). If two slugs are visible at the front of the tuner, adjust the one nearest the top of the tuner chassis. Repeat this procedure for the remaining stations, adjusting them in sequence from the lowest to the highest.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2 volt bias supply to point (T). Positive to chassis.
If a separate marker generator is used, couple loosely to the high side of the sweep generator output lead.
Tuner shield must be in place during alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
NOTE: On VHF-UHF tuners, ground the high side of the 1meg resistor located on the top of tuner chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202	Adjust for response curve similar to Fig. 201 with markers above 90%.
2.	"	"	85MC	83.25MC 87.75MC	6	"	A203	Adjust for response curve similar to Fig. 201. Adjust for maximum amplitude and flat-topped appearance with markers properly positioned.
3.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any high band channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. If markers fall below 70%, on any low band channel, make compromise adjustment of A203 with channel selector set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

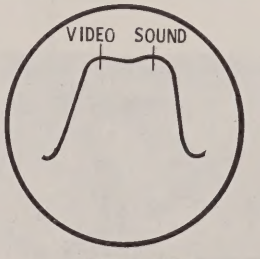
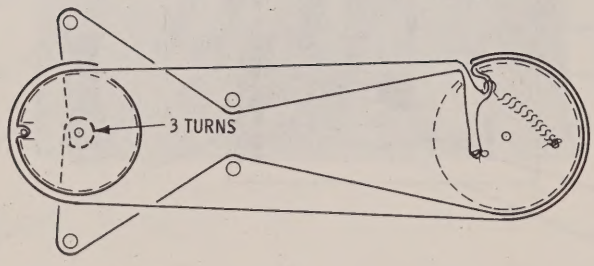
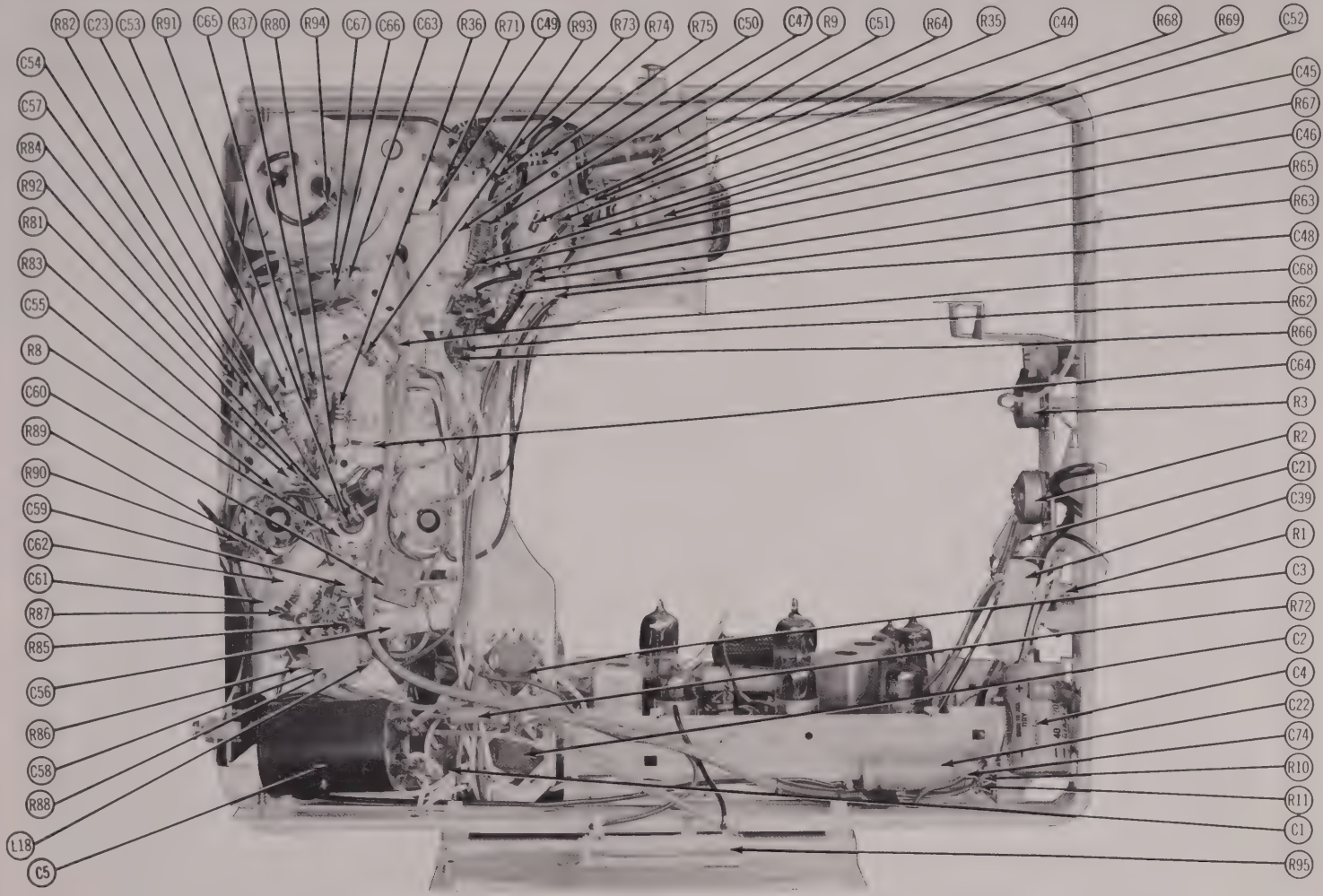


FIG. 201



DRIVE CORD STRINGING



CHASSIS BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3.5 volt bias supply thru a 10K resistor to point (A).
Connect positive lead to chassis.
Turn super range finder control fully clockwise.
Connect a 270mmf capacitor across the VTVM test leads. Use the lowest scale on the VTVM. While peaking the adjustments, keep reducing the signal generator to keep the VTVM reading no higher than -1 volt DC.
Connect a short across the antenna terminals.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	41.25MC (Unmod)	12	DC probe thru 47K to point (B). Common to chassis. (Across video det. load).	A1	Adjust for MINIMUM deflection.
2.	"	"	47.25MC	"	"	A2	"
3.	"	"	42.3MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	45.3MC	"	"	Mixer Plate Coil & A4	"
5.	"	"	41.5MC	"	"	A5	"
6.	"	"	42.0MC	"	"	A6	"
7.	"	"	43.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Leave the super range finder control fully clockwise.
Connect a 270mmf capacitor across the input leads of the scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	41.25MC 42.0MC 43.5MC 45.0MC 45.75MC 47.25MC	12	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across video det. load).		Check for response similar to Fig. 1 with markers as indicated. If curve does not resemble Fig. 1, repeat "Video IF Alignment".
9.	"	"	"	45.0MC	"	"		Connect a short, heavy, solid jumper across L3. Response curve should be similar to Fig. 2. If the 45.0MC marker does not fall on the peak adjust the mixer plate coil slug until it does. Remove the short and repeat step 3 of the "Video IF Alignment". Recheck step 8 above.

SOUND IF ALIGNMENT

Tune in the strongest TV signal available in the area. Adjust the set for normal operation. Turn the super range finder control fully counter clockwise.
Using a hexagonal non-metallic alignment tool, turn A8 slowly clockwise until a buzz is heard in the sound. Then turn counter clockwise for maximum undistorted sound. (There may be two points approximately ½ turn apart at which the sound is loud. Use the one with the slug the farthest clockwise.
Reduce the signal at the antenna terminals (by use of an adjustable attenuator or disconnecting the antenna) until a strong hiss similar to super regeneration is heard in the sound.
Carefully adjust A9 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, further reduce the signal until the hiss returns, then readjust A9.
Carefully adjust A10 for MINIMUM 4.5MC beat pattern in the picture. 4.5MC beat interference appears as a very fine cross hatch pattern on the screen.
Carefully adjust A11 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, further reduce the signal strength. Readjust A11.
Repeat entire procedure, if necessary. DO NOT RETOUCH A9 WITHOUT REPEATING ALL OF SOUND ALIGNMENT.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

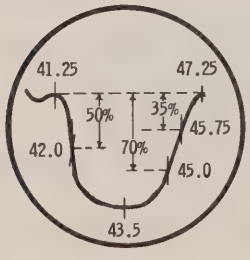


FIG.1

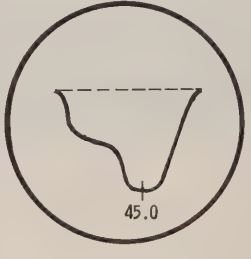
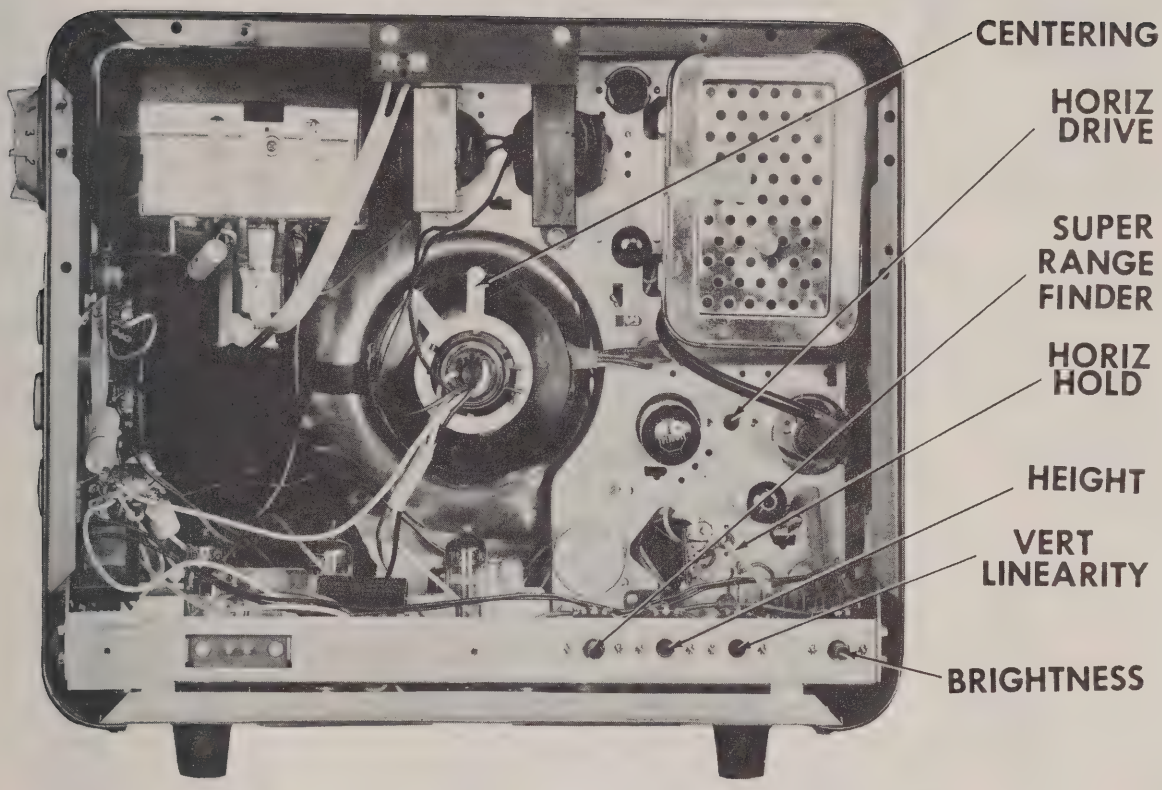


FIG.2



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Allow 15 minutes for receiver to warm-up. Tune in a station and set brightness and contrast controls for a normal picture.

2. Turn horizontal drive control (R8) fully clockwise. Foldover and/or compression will appear near the center of the picture. Slowly turn the drive control clockwise until the foldover or compression disappears. This point will provide maximum width and brightness. DO NOT turn the drive control too far counter clockwise as this will shorten the life of the horizontal output tube.

3. Reduce the contrast to MINIMUM. If the picture loses horizontal sync, adjust the horizontal hold to the point where the picture remains in sync and vertical lines do not bend near the top of the picture. If the horizontal hold requires adjustment, repeat steps 2 and 3.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3BZ6	
V2	2nd Video IF Amp	3BZ6	
V3	3rd Video IF Amp	3CB6	
V4	Video Output-2nd IF Amp	6AW8A	
V5	Sync Sep-Sync Sep - Noise Limiter	3BU8	
V6	Audio Det.	3DT6	
V7	Audio Output	14CU5	
V8	Vert. Mult -Sync Phase Inverter	6CG7	
V9	Vert. Mult -Vert Output	14DB5	
V10	Horiz Mult.	6CG7	
V11	Horiz. Output	12DS8A	
V12	Damper	19AU4GTA	
V13	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	NOTES
V14	17BZP4	17BZP4	17BZP4	① "Aluminized" ② "Silverama" ③ "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	ADMIRAL PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1	150	150	67D83-403	AFH31-37-2C	XAU266	FP214 5	TMS-34	S-105	TVL-1430
C2A	4100	300	67D83-306	AFH32-41-50	B0332	FP227 7	TMT-105	D-148	TVL-2641
B	4100	300							
C3A	60	200	67D85-307	AFH4-46-20	D0032	FP419 35		Q-136	*R2573
B	20	200			*RS305	TC50X			
C	5	200							
D	50	50							
C4	40	200	67 42S-2	PRS250V40	BR4035	TC56	TD-40-250	MT-2540	TVA-1511
C5A	50	300	67D85-204	AFH3-41	C0400	FP242	TMT-36	D-132	*R2574
B	40	150							

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No	SPRAGUE PART No	NOTES
C2	14		65D6-40							N2O
C7	.5-8		54A3-8							N220
C8	15				TCZ-15		TCO-15			NPO 5% ① N220
C9	7-12.5		54A35-7							
C10	820		65C10-51		DD-821	BYA10T82	ED-820		5GA-T82	
C11	680		65C10-51		DD-821	BYA10T82	ED-820		5GA-T82	
C12	820		65C10-51		DD-821	BYA10T82	ED-820		5GA-T82	
C13	2200		65D10-111	BPD-0023	DD-822	BYA10D82	ED-0022	UC-5222	5GA-D82	
C14	680		65D10-111		DD-821	BYA10T82	ED-820		5GA-T82	②
C15	680		65D6-131			1R5T56	CY15C56DJ		MS-356	5%
C16	5000		65D10-5	BPD-006	DD-503	BYA10D5	ED-006	DC525	5HK-D5	
C17	5.6		53D41-056	NPO-5.6 S	TC-5.6		TCC-5.6	2T-5556	5TCCB-V56	10%
C18	5000		65D10-5	BPD-006	DD-503	BYA10D5	ED-003	DC525	5HK-D5	
C19	47		65D10-47	BPD-000047	DD-470		LI0Q47	ED-47	UC-5447	5GA-Q47
C20	10		65D10-150	NPO-61 15	TC-15		LI0Q15	ED-15		10%
C21	.1	300	54D16-53	P388N-1	DF-103		CUB3P1		GEM-201	ZTM-P1
C22	.1	100		P388N-1	DF-103		CUB3P1		GEM-201	ZTM-P1
C23	1000	1600		DAC-2	DD50-102		HVR302A	HD8-1000	DC3021	BL-D10 ③
C24	10000		65D10-61	BPD-0047	DD-103		BYA501	ED-01	DC501	5HK-S1
C25	4.7			NPO-61 4.7	TCZ-4R7		CU07C	TCO-4.7	ZT-4547	5TCCB-Y47
C26	47		65D10-47	BPD-000047	DD-470		LI0Q47	ED-47	UC-5447	5GA-Q47
C27	47		65D10-47	BPD-000047	DD-470		LI0Q47	ED-47	UC-5447	5GA-Q47
C28	4.5		65B37-045							5%
C29	1000		65D10-53	BPD-001	DD-103	BYA501	ED-1000	DC501	5HK-D1	
C30	82		65D10-26		TCZ-82		TCO-82			NPO 5% N220 5%
C31	18		65D10-140							
C32	4700		65D10-113	BPD-005	DD-473	BYA10D47	ED-0047	UC-5247	5GA-D47	
C33	10000		65D10-61	BPD-01	DD-103	BYA501	ED-01	DC511	5HK-S1	
C34	.047	100	54D16-55	P388N-047				BC3547J	ACS5147	25R-647
C35	10000		65D10-53	BPD-001	DD-103	BYA501	ED-001	DC501	5HK-D1	
C36	10000		65D10-61	BPD-01	DD-103	BYA501	ED-01	DC501	5HK-S1	
C37	10000		65D10-61	BPD-01	DD-103	BYA501	ED-01	DC501	5HK-S1	
C38	.01	600	54D6-13	P388N-01	DS-103		CUB5B1	GP-10000	GEM-511	5TM-S1
C39	.1	400	54C37-32	P388N-1	DF-104		CUB4P1		GEM-401	4TM-P1
C40	.1	600	54D6-26				BC5P2J		AC5501	4SE-P1
C41	10000		65D10-61	BPD-01	DD-103	BYA501	ED-01	DC501	5HK-S1	
C42	150		65D10-85	NT50-D1 180	TCN-150	CU7I5U	TCT-150		5TCU-T15	N750
C43	4700		65D10-113	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C44	4700		65D10-113	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C45	10000		65D10-61	BPD-01	DD-103	BYA501	ED-01	DC511	5HK-S1	
C46	2200		65D10-111	BPD-0023	DD-222	BYA10D22	ED-0022	UC-5223	5GA-D22	
C47	.001	1600	54B3-53	P1698N-001	DD50-103	CUB5E1	HD8-1000	GEM-5161	MB-D1	10%
C48	.047	200	54C35-59							
C49	.1	400	54D6-26	P388N-1	DF-104	CUB4P1		GEM-401	4TM-P1	2% Drift
C50	.1	400	54C37-32			BC5P2J			AC5501	
C51	.047	200	54D6-41	P388N-047	DF-503	CUB3S47		GEM-5147	3TM-S47	
C52	.022	600	54B32-11							10%
C53	.001	600	54C34-45					GEM-1631		10%
C54	.001	600	54C34-45					GEM-1631		
C55	4700		65D10-113	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	10%
C56	.022	200	54C35-51							
C57	.01	600	65D10-61	P388N-01	DS-103	CUB5E1	GP-10000	GEM-511	5TM-S1	
C58	3300		65B31-393	1484-0059		1R5D39			MS-339	10%
C59	390		65B31-391		DS-391	5R5T39	ED-390		MS-339	10%
C60	680		65B31-681	1484-00068	DS-681	1R5T68	ED-680		MS-368	
C61	4700		65D10-113	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C62	.047	600	54D6-28	P388N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C63	.033	300	54C35-60	P388N-033	DF-503	CUB3S33		GEM-5133	3TM-S33	
C64	.1	600	54D6-7	P388N-1	DF-104	CUB4P1		GEM-601	6TM-P1	10%
C65	1000	1000	65D10-147							N1500 10% ①
C66	1000	1000	65D10-149							N1500 10% ②
C67	150	3000	65D10-149							N1500 10%
C68	1000	3000	65D10-149							
C69	.047	600	54D32-36	P388N-047	DF-503	CUB4S47		GEM-6147	6TM-S47	
C70	820		65D10-51		DD-821	BYA10T82	ED-820		5GA-T82	
C71	820		65D10-51		DD-821	BYA10T82	ED-820		5GA-T82	
C72	820		65D10-51		DD-821	BYA10T82	ED-820		5GA-T82	
C73	820		65D10-51		DD-821	BYA10T82	ED-820		5GA-T82	
C74	5000		65D10-5	BPD-005	DD-503	BYA10D5	ED-005	DC525	5HK-D5	③
C75	5000	1400	65D10-133	DAC-9	DDH-501	HVE1E06	HD3-4700	GEM-1625	BL-D50	

① Chassis stamped run 19 and higher use 18mmf 5% N220 (Part #65D10-140) in this application.
② Not used in some versions
③ Chassis stamped run 10 use 300mmf(Part #65D10-140) in this application.
④ Chassis stamped run 10 use 1900mf 2KV 10% N1500 (Part #65D10-149) in this application.

CONTROLS

ITEM No	RATING: RESIST ANCE	WATTS	REPLACEMENT DATA: ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No	IRC PART No	MALLORY PART No	INSTALLATION NOTES
R1A	1meg	1	76D1-83	B-70-S	A47-1meg-2	Q3J-137	TA16A	Volume
B	Shaft			Not Req.	RSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-14	76-1	US-28	
R2A	25K	1	76D20-98	B-26	A47-25K-S	Q2J-120	TA25L	Contrast
B	Shaft			Not Req.	RSS-3	Not Req.	Not Req.	
R3A	400K	1	76D20-97	B-46	A47-200K-S	Q1J-129	U43	Vert Hold
B	Shaft			Not Req.	RSS-3	Not Req.	Not Req.	
R4A	100K	1	76D80-101				PTA6L	Brightness
B	Shaft						Not Req.	
R5A	500Ω	1	76D20-100			BU-103	PTA5L	Vert Lin
B	Shaft					TMJ-Kit	Not Req.	
R6A	1 Meg	1	76D80-104			BU-103	PTA16L	Height
B	Shaft					TMJ-Kit	Not Req.	
R7A	100K	1	76D20-101				PTA10L	Super Range Finder
B	Shaft						Not Req.	
R8A	10K	1	76D80-106	AB-14	A47-10K-S	BU-116	TA14L	Horiz. Drive
B	Shaft			AK-1	TMJ-1/4	TMJ-Kit	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	ADMIRAL PART No.	NOTES
R9	4200Ω	2	60B-40-322	Note 1
R10	910Ω 5%			Note 2
R11	910Ω 5%			Note 2
R12	4 Meg		60B-8-475	
R13	7.5meg		60B-8-755	Note 3
R14	4700Ω 5%		60B-7-472	
R15	100Ω		60B-8-102	
R16	150K		60B-8-154	
R17	39K		60B-8-393	
R18	470Ω		60B-8-471	
R19	47Ω		60B-8-470	
R20	220K		60B-8-224	
R21	220K		60B-8-224	
R22	4700Ω		60B-8-472	
R23	22K		60B-8-223	
R24	470Ω		60B-8-471	
R25	68Ω		60B-8-680	
R26	470Ω		60B-8-471	
R27	150Ω		60B-8-151	
R28	820Ω	1	60B-8-821	
R29	100Ω		60B-8-101	
R30	3300Ω	2	60B-20-332	
R31	15000Ω	1	60B-15-153	
R33	8200Ω		60B-8-822	
R33	8200Ω		60B-8-822	
R34	180K		60B-8-184	
R35	39K		60B-8-393	
R36	470K		60B-8-474	
R37	150K		60B-8-154	
R38	820K	1	60B-14-822	
R39	2.2meg		60B-8-225	
R40	10K		60B-8-103	
R41	820K		60B-8-824	
R42	220Ω		60B-8-221	
R43	100K	2	60B-8-104	
R44	47K	3	60B-14-473	
R45	330K		60B-8-334	
R46	220K		60B-8-224	Note 4
R47	560K		60B-8-564	
R48	8200Ω		60B-8-822	
R49	680Ω		60B-8-681	
R50	180Ω		60B-8-181	
R51	1.4meg 5%		60B-7-135	
R52	910K 5%		60B-7-914	
R53	220Ω	2	60B-20-221	

ITEM No.	RATING: OHMS	WATT	ADMIRAL PART No.	NOTES
R54	330K		60B-8-334	
R55	47K		60B-8-473	
R56	47K		60B-8-473	
R57	56K		60B-8-563	
R58	4.7meg		60B-8-475	
R59	270K		60B-8-274	
R60	15K		60B-8-153	
R61	4 Meg		60B-8-475	
R62	2.2meg		60B-8-225	
R63	270K		60B-8-684	
R64	5600Ω		60B-8-562	
R65	15K		60B-8-153	
R66	33000Ω 5%		60B-7-332	
R67	220K		60B-8-224	
R68	15K		60B-8-153	
R69	470K		60B-8-474	
R70	56K		60B-8-563	
R71	2.2meg		60B-8-225	
R72	470Ω	3	61B-24-317	
R73	220K		60B-8-224	
R74	100Ω		60B-8-101	
R75	18K	1	60B-14-183	
R76	2700Ω	1	60B-14-271	Note 5
R77	220K		60B-8-221	
R78	3.8Ω Cald		61A47	Note 6
R79	220Ω		60B-8-221	
R80	100K 5%		60B-7-104	
R81	100K 5%		60B-7-104	
R82	4.7meg		60B-8-475	
R83	470K		60B-8-474	
R84	22K	3	60B-20-223	
R85	5600Ω		60B-8-562	
R86	1000Ω		60B-8-102	
R87	120K		60B-8-124	
R88	82K	2	60B-8-823	
R89	100Ω		60B-8-101	
R90	1meg	2	60B-8-105	
R91	22K	2	60B-20-223	Note 7
R92	22K	2	60B-20-223	Note 7
R93	4700Ω		60B-8-472	
R94	1Ω		60B-28-63	
R95	1Ω		61B-28-63	
R96	1Ω	15	61B-5-13	
R96	56Ω	5	61A-28	
R97	470K		60B-8-474	

Note 1. Chassis 16AF1 uses 1800Ω 2W (Part #60B-20-182) in this application.
Note 2. Chassis stamped run 12 and lower use a single 470Ω (Part #60B-8-471) to replace R10 and R11.
Run 13 and higher may use a single 1800Ω (Part #60B-8-182) to replace R10 and R11.
Note 3. Chassis stamped run 16 and higher use 10meg (Part #60B-8-106) in this application.
Note 4. Chassis stamped run 18 and higher use 100K (Part #60B-8-104) in this application.
Note 5. Some versions may use 1800Ω 1W (Part #60B-15-182) in this application.
Note 6. Temperature compensating resistor.
Note 7. Some versions may use a single 12K 2W (Part #61B-24-353) to replace R91 and R92.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	79B43-13						A-13X ①	
T2A	Yoke-Horiz. (19MR)	94U47-1		MDF-120				Y-80 & NW45 ③	
B	(110°)- Vert. (14MR)	②							
M6	Rear Cover & Centering Device	94C148-1							
	Rear Cover & Centering Device	94D148-1							Alternate
	Yoke Clamp	185D93-1							
T3	Horiz. Output	79D77-2		HVO-178					

① Direct se autoformer.
② Includes resistors R78, R79 and R80.
③ Use original rear cover and centering device.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	SEC	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	2700Ω	3-4Ω	79D33-15	Z1U01	A-3025	AU-805	A-3333	24853	S-12X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V C	IMP	REPLACEMENT DATA: ADMIRAL PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω		78U22-2	4A07	

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA: ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	47.25MC Trap Coil	73B37-1					1.36 Microhenries
L2	41.25MC Trap Coil	73B37-1					1.36 Microhenries
L3	1st. Video IF	72C132-31					
L4	2nd. Video IF	72C132-23					
L5	3rd. Video IF	72C132-33					
L6	4th. Video IF	72B18-3					Includes Cap. - Note 1
L7	RF Choke	73B31-6					
L8	Shunt Peaking Coil	73B8-34		TV-308			870 Microhenries
L9	RF Choke	73B31-3					36 Microhenries
L10A	4.5MC Trap	72C185-2					
B	1st. Sound IF						
L11	Series Peaking Coil	73B8-23		19-3180 *	TV-184 *	8180 *	VP-5 * 189 Microhenries, wound on 4700Ω resistor Wound on 10K resistor
L12	Shunt Peaking Coil	73B8-36					
L13	2nd. Sound IF	73B180-1					
L14	Quadrature Coil	72C132-18					1.4 Microhenries
L15	Fil. Choke	73B37-3		19-1001	BC-583	6804	1.4 Microhenries
L16	Fil. Choke	73B37-3		19-1001	BC-583	6804	1.4 Microhenries
L17	Line Choke	73B31-1					58 Microhenries

* Parallel with 4700Ω resistor.
Note 1. Alternate part #72B18-1, 72B19-1, 72B18-2

TRANSFORMER (HORIZ. OSC.)

ITEM No	DC RES: PRI	SEC	REPLACEMENT DATA: ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L18	81Ω		94C17-7	19-1576 *	TV-163 *	8210 *	H-102 *	HS-5 *	18-45 Millihenries * Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ^)	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No	Thordarson PART No	Triad PART No
L19	250A	27Ω	8 Hy	74B18-24	C5037 ①	C-2974		C-2328 ①	26C44	C-23X

① Drill new mounting hole.

RECTIFIERS

ITEM No	RATING: CURRENT (Measured)	REPLACEMENT DATA: ADMIRAL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	GENERAL ELECTRIC PART No.	SARKES TARZIAN PART No.	NOTES
M1	250A	93A4-4 ①	1023 ①	RS3505L ①	1N007 ②	350A ① M500 ②	① Selenium type. ② Germanium type.
M2	250A	93A4-4 ①	1023 ①	RS3505L ①	1N007 ②	350A ① M500 ③	③ Silicon type. ④ Two required.
M3		93B5-4 ①	1415 ① ④	1T1 ① ④			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: ADMIRAL PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M4	1N87	1N87 *	1N60	1N60	Video Detector (Pigtail)

* Some versions may use 1N60 or 1N295 in this application.

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuner	94E144-19	VHF - Ch. 16F1
	Tuner	94E144-20	UHF-VHF - Ch. 16AF1
	Tuner	94C112-5	UHF - Ch. 16AF1
M6	Centering Device	94C148-1	Includes yoke cover
	Centering Device	94D148-1	Alternate
	Printed Circuit Board	A5770-2	Complete with components - less tubes

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

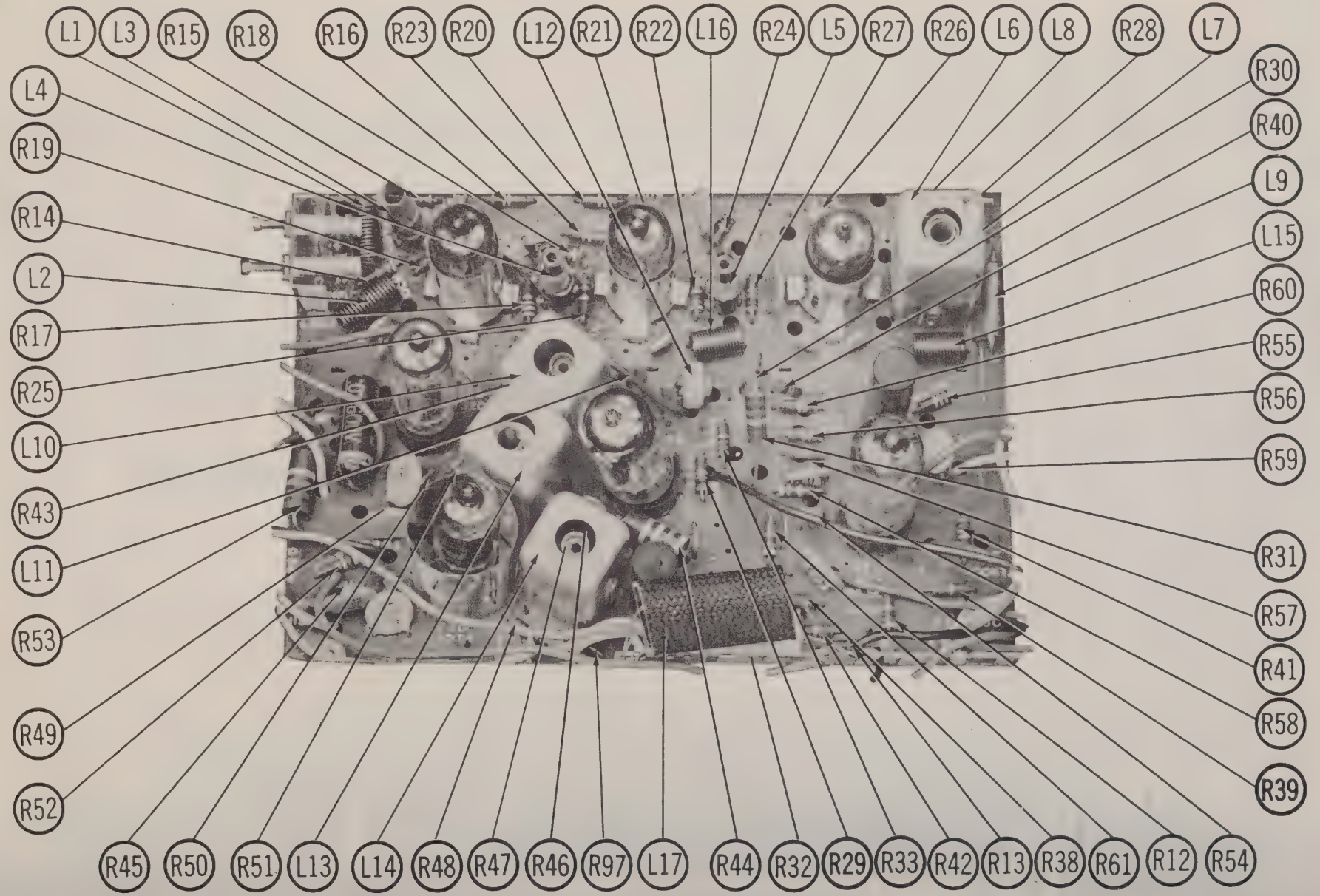
NAME	PART NO.	DESCRIPTION
Safety Glass	21D99-2	
Cabinet Front	23E293-1	Models P17D21, P21D41
Cabinet Front	23E293-2	Models P17D42, P21D22
Cabinet Front	23E293-3	Models P17D23, P21D23
Cabinet Front	23E293-4	Models P17D24, P21D24
Knob	33D237-6	VHF Channel Selector - Models P17D21, 22, 23
Knob	33D237-2	VHF Channel Selector - Model P17D24
Knob	33D237-5	UHF Channel Selector - Models P17D21, 22, 23
Knob	33D237-1	VHF Channel Selector - Model P21D24
Knob	33D237-4	UHF Indicator
Knob	33D237-3	Fine Tuning
Knob	33A143-9	On-Off-Volume, Contrast, Vert. Hold - Models P17D21, 22, 23, P21D21, 22, 23
Knob	33A143-7	On-Off-Volume, Contrast, Vert. Hold - Models P17D24, P21D24
Handle	37C161-6	Models P17D21, P21D21
Handle	37C161-1	Models P17D22, 23, P21D22, 23
Handle	37C161-3	Models P17D24, P21D24
Antenna	68C230-1	Hide-away - Models P17D22, 23, 24, P21D22, 23, 24
Cabinet	34E122-5	Model 17D21, P21D21
Cabinet	34E122-3	Models P17D23, P21D22
Cabinet	34E122-3	Models P17D23, P21D23
Cabinet	34E122-4	Models P17D24, P21D24

WIRING DATA

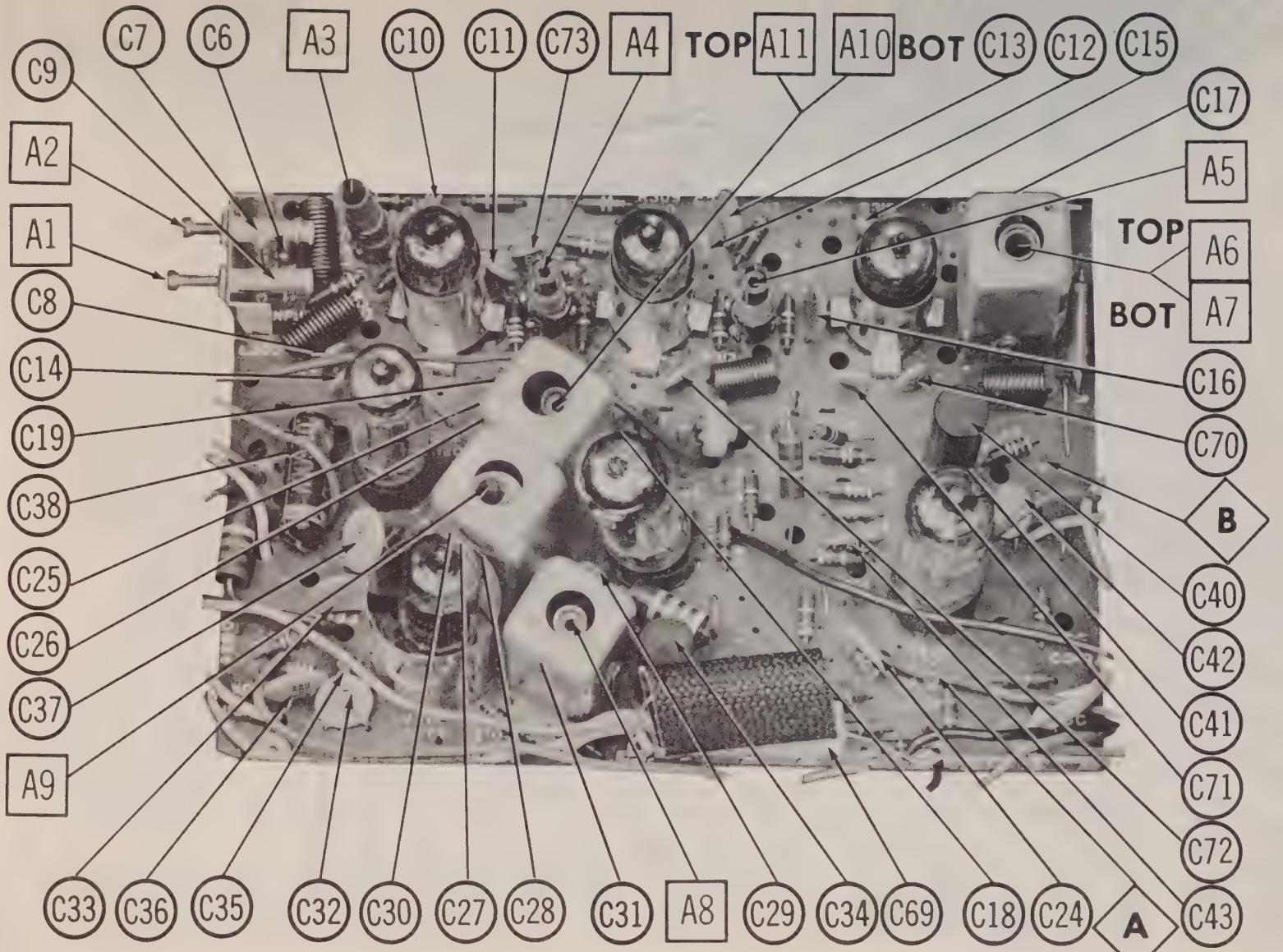
High Voltage Lead	Use BELDEN No [illegible]
Shielded Hook-up Wire	Use BELDEN No. 8680 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

ADMIRAL CHASSIS 16F1, 16AF1

FOLDER 1



RESISTOR AND INDUCTOR IDENTIFICATION



CAPACITOR AND ALIGNMENT IDENTIFICATION

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	4BC8	
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	120		65D10-136							N1500 10%
C202	22		65D10-134	N750-SI 22	TCN-22	C10Q22U	TC7-22		5TCU-Q22	N750 10%
C203	15		65D10-135	N750-SI 15	TCN-15	C10Q15U	TC7-15		5TCU-Q15	N750 10%
C204	8.2		65D10-131	NPO-SI 8.2			TCO-8.2			NPO 5%
C205	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C206	3.0		65B41-030	NPO-SI 3.0		C10V3C	TCO-3	ZT-553		10%
C207	2.2		65D10-121	NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	10%
C208	.5-3		66A38-6		829-3		3115-E	CT565A		
C209	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C210	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C211	1.5		65B28-015	NPO-SI 1.5	TCZ-1R5		TCO-1.5	ZT-5515	5TCCB-V15	10%
C212	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C213	.5-3		66A38-6		829-3		3115-E	CT565A		
C214	47		65D10-73							N1400 5%
C215	1.0		65B28-010	NPO-SI 1.0	TCZ-1.0		TCO-1		5TCCB-V1	10%
C216	10		65D10-139							N1500 5%
C217	1000		65D10-53	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C218	.022	200	64B25-61	P288N-022	DD-203	CUB4S22	ED-02	GEM-4122	2TM-S22	
C219	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C220	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C221	1000		65B26-5	EF-001	MFT-1000				503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

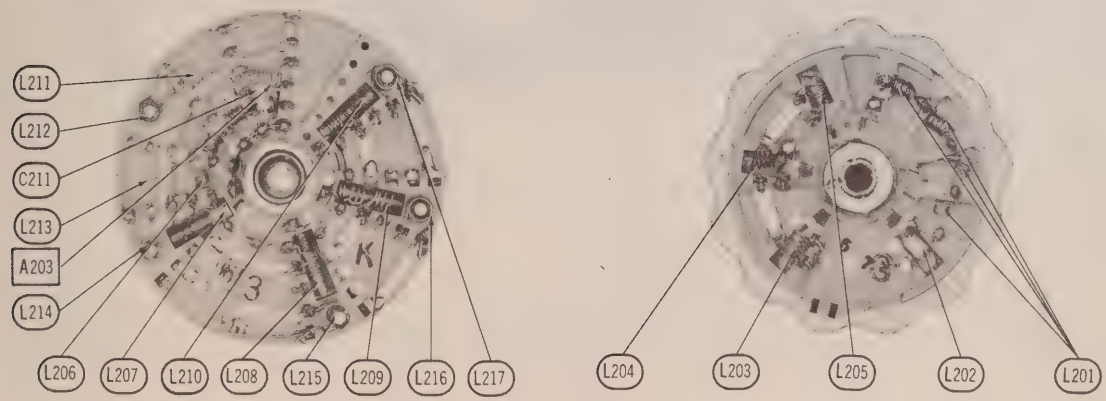
ITEM No.	RATING OHMS	RATING WATT	ADMIRAL PART No.	NOTES
R201	3900Ω		60B-9-392	
R202	560K		60B-9-564	
R203	820K		60B-9-824	
R204	33Ω		60B-9-330	
R205	10K		60B-9-103	
R206	1meg		60B-9-105	
R207	1000Ω		60B-9-102	
R208	10K		60B-9-103	
R209	10K		60B-9-103	

COILS (RF-IF)

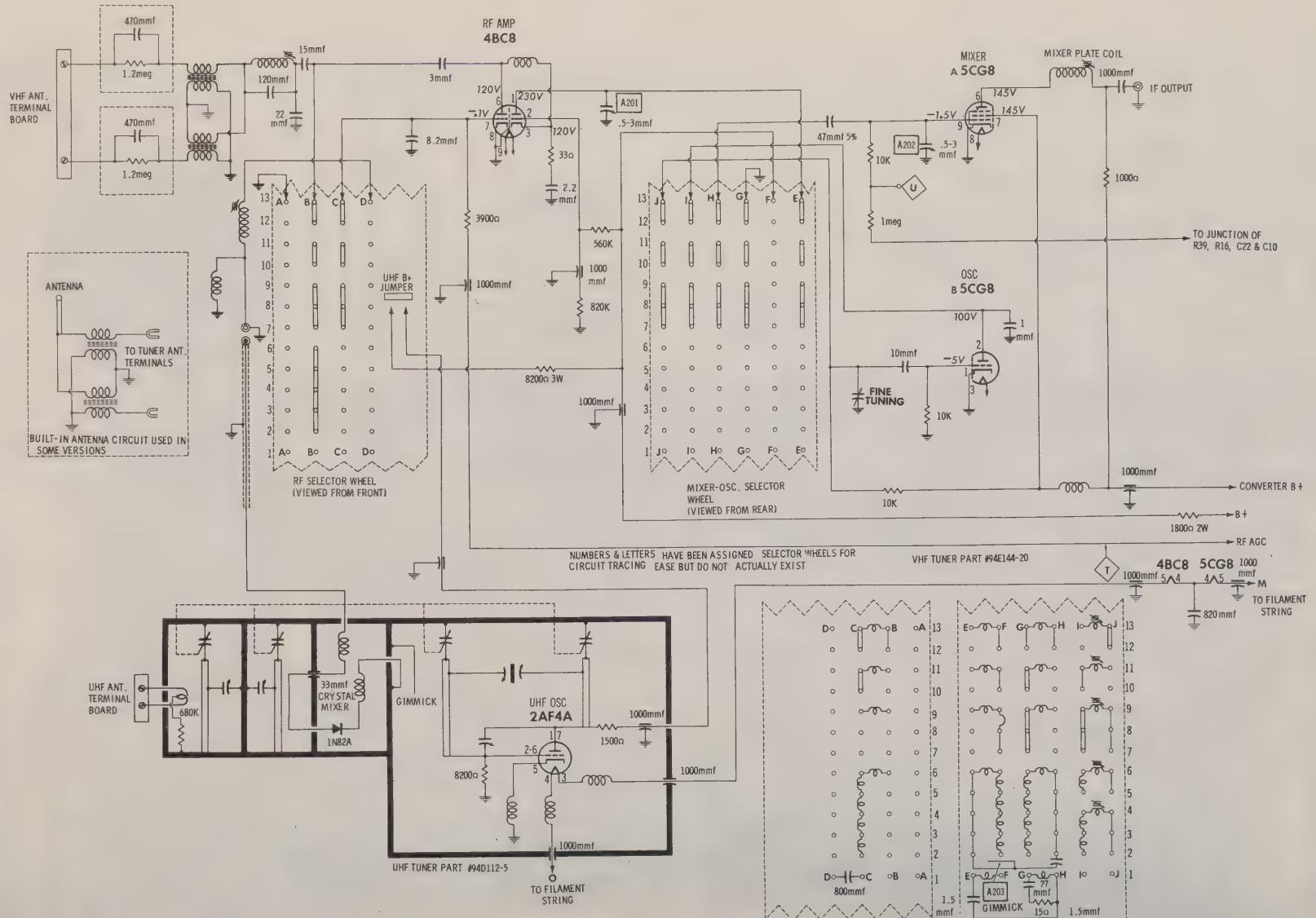
ITEM No.	USE	ADMIRAL PART No.	NOTES
L201	Ant. Coils	73D30-12	Channels 2-5
L202	Ant. Coils	73D30-17	Channel 6
L203	Ant. Coil	73D30-18	Channel 9
L204	Ant. Coil	73D30-21	Channel 11
L205	Ant. Coil	73D30-40	Channel 13
L206	RF Coils	73D30-19	Channels 2-5
L207	RF Coil	73D30-27	Channel 6
L208	RF Coil	73D30-8	Channel 9
L209	RF Coil	73D30-5	Channel 11
L210	RF Coil	73D30-25	Channel 13
L211	Osc. Coils	73D30-11	Channels 2, 3
L212	Osc. Coil	73D30-37	Channel 4
L213	Osc. Coil	73D30-34	Channel 5
L214	Osc. Coil	73D30-36	Channel 6
L215	Osc. Coil	73D30-1	Channel 9
L216	Osc. Coil	73D30-33	Channel 11
L217	Osc. Coil	73D30-32	Channel 13

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .2-1meg	63A11-1	Centralab Sprague	RC-471 R-9197
K202	Antenna Isolation	470mmf, .2-1meg	63A11-1	Centralab Sprague	RC-471 R-9197



TUNER DISC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

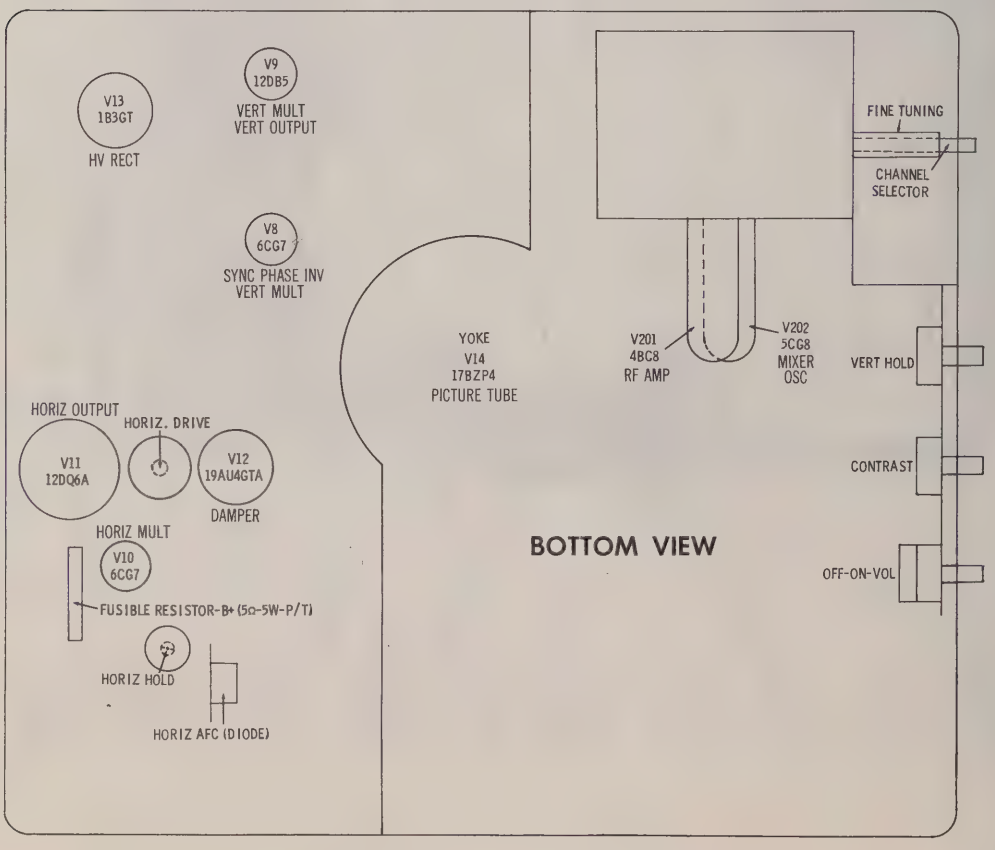
ALTERNATE TUNER SCHEMATIC

CHASSIS-REAR VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	140K	47Ω	8Ω	8.5Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	3BZ6	100K	▲ 68Ω	8.5Ω	9Ω	† 470Ω	† 470Ω	120K		
V3	6CB6	.1Ω	150Ω	9Ω	10Ω	■ 470Ω	■ 470Ω	0Ω		
V4	6AW8A	0Ω	100K	† 47K	12.5Ω	11Ω	0Ω	4000Ω	■ 8200Ω	■ 4200Ω
V5	3BU8	■ 220Ω	† 8200Ω	1.8meg	11Ω	10Ω	■ 11K	† 330K	† 35K	■ 4.7meg
V6	3DT6	15.5Ω	680Ω	5.5Ω	5Ω	† 330K	■ 8200Ω	560K		
V7	12CU5	¶	550K	5.5Ω	8Ω	550K	† 220Ω	† 450Ω		
V8	6CG7	● † 1.3meg	220K	●120K	0Ω	1.5Ω	† 12K	1.6meg	3300Ω	0Ω
V9	12DB5	† 18K	● 450Ω	2.2meg	14Ω	16Ω	2.2meg	● 450Ω	NC	† 840Ω
V10	6CG7	† 5700Ω	5.1meg	1000Ω	1.5Ω	3Ω	† 82K	120K	1000Ω	0Ω
V11	12DQ6A	TP	16Ω	NC	† 11K	1meg	TP	18Ω	0Ω	TOP CAP ‡9Ω
V12	19AU4GTA	NC	NC	¶	NC	† 0Ω	NC	21Ω	18Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡429Ω
V14	17BZP4	14Ω	39K	‡125K	‡125K	NC	NC	● 200K	12.5Ω	
V201	6BC8	† 2200Ω	350K	INF	4Ω	3Ω	INF	3.5meg	0Ω	0Ω
V202	5CG8	10K	■ 12K	0Ω	4Ω	5Ω	■ 3700Ω	■ 2700Ω	0Ω	1meg

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
■ MEASURED FROM 155V SOURCE.
† MEASURED FROM 270V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
▲ MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the top, 3 from the side.

2. Remove 5 metal screws holding the rear cover. Remove the antenna terminal board leads and the rear cover.

3. Remove the picture tube socket, speaker leads and yoke leads.

4. Remove the top chassis bolt from the rear of the handle.

5. Remove 1 metal screw holding the top chassis brace.

6. Remove 2 chassis bolts from the bottom.

7. Partially remove the chassis, remove the HV lead and remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL 14TT92 (CH. GT)

TRADE NAME	Olympic	MODELS	CHASSIS
		14TT91, 14TT92	GT
		14TT91U, 14TT92U	GTU
		17TU93, 17TU94, B, M	GU
		17TU93U, 17TU94BU, MU, U	GUU
MANUFACTURER	Olympic Radio & Television Inc., 34-01 38th. Ave., Long Island City 1, N.Y.		
TYPE SET	Televison Receiver		
TUBES	Thirteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 135 Watts, 1.2 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 11 o'clock, and should be adjusted first. The LOW band adjustments are located at 4, 5 and 6 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 screws holding the front trim from the bottom. Pull front out at bottom and lift up to remove.

FOCUS

The focus may be varied by the position of a strap on the base of the picture. The strap can be connected between pins 6 and 1 or 6 and 10.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSE DEVICE

A 7.5Ω fusible resistor (R83) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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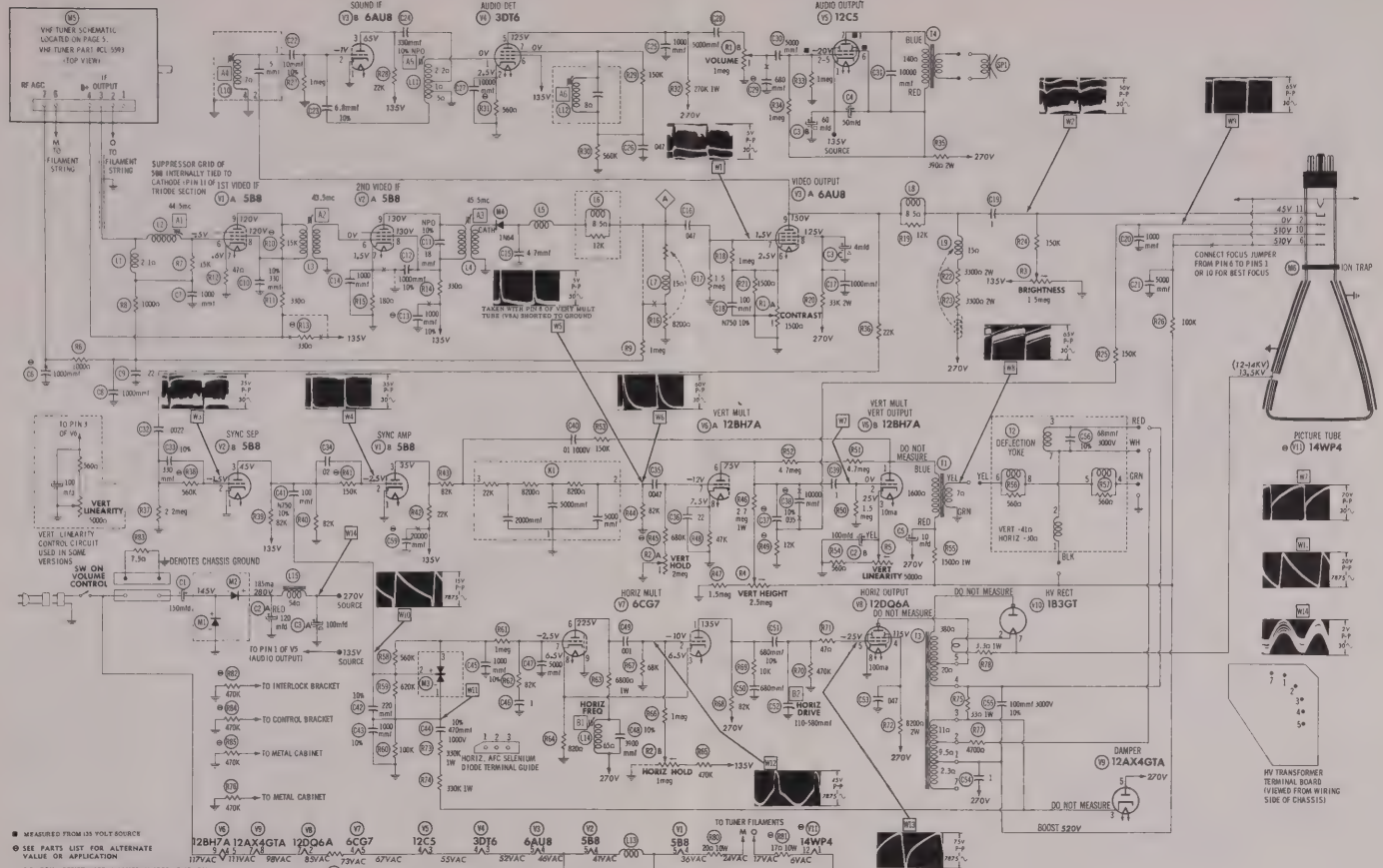
H426

OLYMPIC MODELS 14TT91, U, 14TT92, U, 17TU93, U, 17TU94, B, BU, M, MU, U (Ch. GT, GTU, GU, GUU)

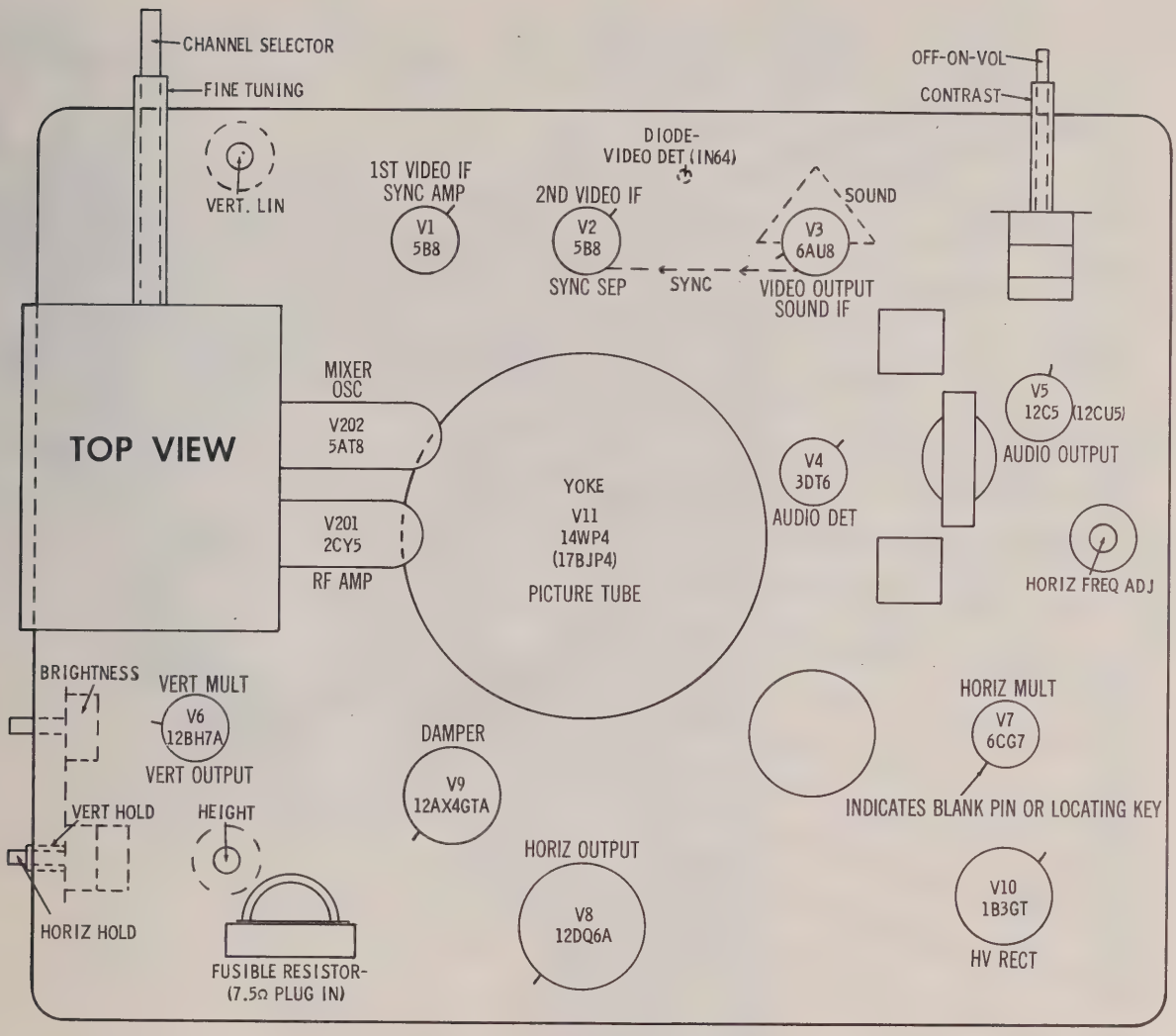
SET 395 FOLDER 2


VHF TUNER SCHEMATIC
LOCATED ON PAGE 5
VHF TUNER PART NO. 5593
(TOP VIEW)
SOUND IF V3 B 6AU8
AUDIO DET V4 3DT6
AUDIO OUTPUT V5 12C5
VOLUME
BRIGHTNESS
CONTRAST
VIDEO OUTPUT V3 A 6AU8
1ST VIDEO IF V1 A 5B8
2ND VIDEO IF V2 A 5B8
SUPPRESSOR GRID OF 5B8 INTERNALLY TIED TO CATHODE (PIN 1) OF 1ST VIDEO IF TRIODE SECTION
TAKEN WITH PIN 6 OF VERT MULT TUBE (V6A) SHORTED TO GROUND
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 1 OR 10 FOR BEST FOCUS
ION TRAP
PICTURE TUBE V11 14WP4
(12-14KV) 13.5KV
SYNC SEP V2 B 5B8
SYNC AMP V1 B 5B8
VERT LINEARITY
VERT LINEARITY CONTROL CIRCUIT USED IN SOME VERSIONS
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
VERT MULT V6 A 12BH7A
VERT MULT VERT OUTPUT V6 B 12BH7A
DO NOT MEASURE
DEFLECTION YOKE
VERT -41Ω HORIZ -30Ω
VERT HOLD
VERT HEIGHT
VERT LINEARITY
HORIZ MULT V7 6CG7
HORIZ OUTPUT V8 12DQ6A
DO NOT MEASURE
HV RECT V10 1B3GT
HORIZ FREQ
HORIZ HOLD
HORIZ DRIVE
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
DAMPER V9 12AX4GTA
BOOST $20V
HV TRANSFORMER TERMINAL BOARD (VIEWED FROM WIRING SIDE OF CHAS 5515)
TO INTERLOCK BRACKET
TO CONTROL BRACKET
TO METAL CABINET
TO METAL CABINET
TO TUNER FILAMENTS
135V SOURCE
270V SOURCE
TO PIN 1 OF V5 (AUDIO OUTPUT)
TO PIN 3 OF V6
M TO FILAMENT STRING
O TO FILAMENT STRING
V6 12BH7A 117VAC
V5 12AX4GTA 117VAC
V8 12DQ6A 98VAC
V7 6CG7 83VAC
V5 12C5 73VAC
V4 3DT6 55VAC
V3 6AU8 32VAC
V2 5B8 46VAC
V1 5B8 41VAC
V11 14WP4 36VAC
V11 14WP4 24VAC
V11 14WP4 17VAC
V11 14WP4 12AL
V11 14WP4 6VAC
MEASURED FROM 135 VOLT SOURCE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

OLYMPIC MODELS 14TT91, U, 14TT92, U, 17TU93, U, 17TU94, B, BU, M, MU, U (Ch. GT, GTU, GU, GUU)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

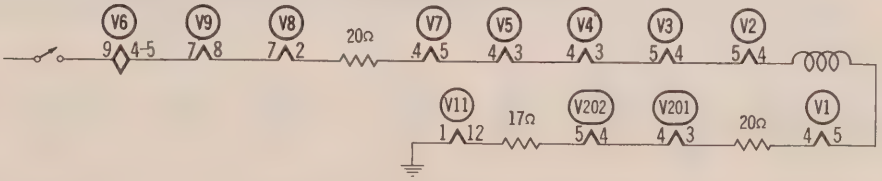
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R83), Rectifiers (M1, M2), V5**

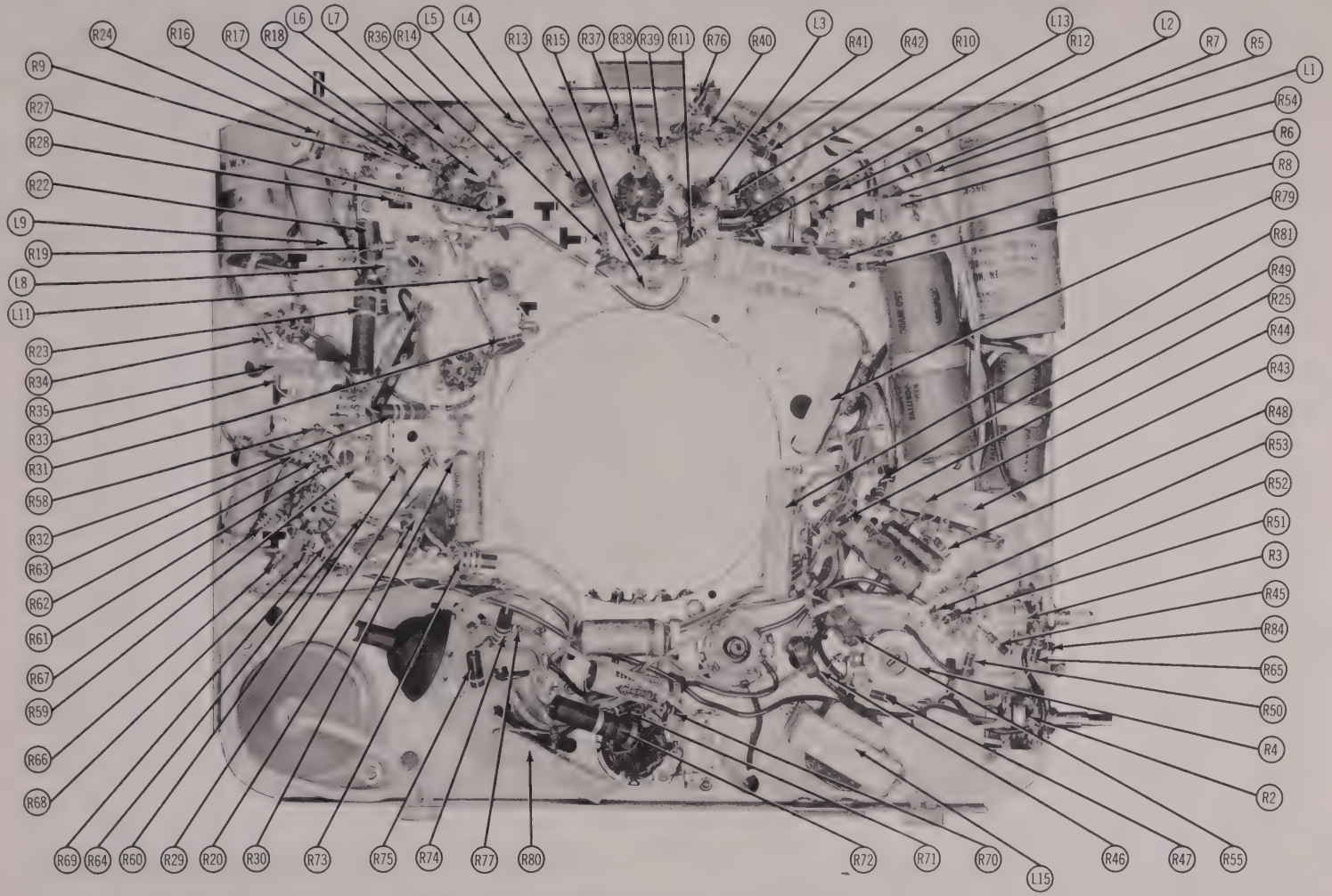
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, Diode (M4), V3, V5**
No pic, no sound, has snow - **V201, V202, V5**
No pic, has sound, has raster - **V3, V11**
Has pic, no sound - **V3, V4, V5**

SYNC FAILURE
No vert. sync - **V2, V1, V5**
No horiz. sync - **V2, V1, Rectifier (M3), V5**
No vert. or horiz. sync - **V2, V1, V5**

SWEEP FAILURE
No raster, has sound - **M3, V7, V8, V9, V10, V11, V5**
No vertical deflection - **V6**
Poor vert. linearity or foldover - **V6**
Poor horiz. linearity or foldover - **V7, V8, V9, V5**
Narrow picture - **V7, V8, V9, V5, M1, M2**
Vert. off freq. - **V6**
Horiz. off freq. - **V7, V5**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUNER SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shiled floating over mixer-osc. tube (V202). Low side to chassis.	Not used	44.5MC (Unmod)	Any non-interfering channel	USE VTVM. DC probe thru 100K to point (A). Common to chassis. (Across video det. load).	Mixer Plate Coil & A1	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
2.	"	"	"	43.5MC	"	"	A2	"
3.	"	"	"	45.5MC	"	"	A3	"
4.	"	"	44.0MC (10MC Swp)	43.25MC 45.75MC	"	Vert. Amp. thru 100K to point (A). Low side to chassis. (Across video det. load).		Use only enough sweep generator output to provide a usable pattern on scope. Check for response similar to Fig. 1. If necessary, retouch mixer plate coil slug and A1 thru A3 for desired response.

SOUND IF ALIGNMENT

Connect the DC probe of the VTVM thru 1meg to pin 1 (grid) of the 3DT6 (V4). Common to chassis.
Turn the set on and tune in a strong TV signal. Adjust A4 and A5 for maximum deflection on the VTVM. Disconnect the VTVM. Adjust A6 for maximum undistorted sound. Retouch A4 and A5 for maximum volume.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 12.

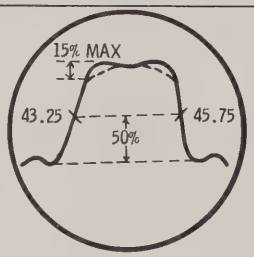
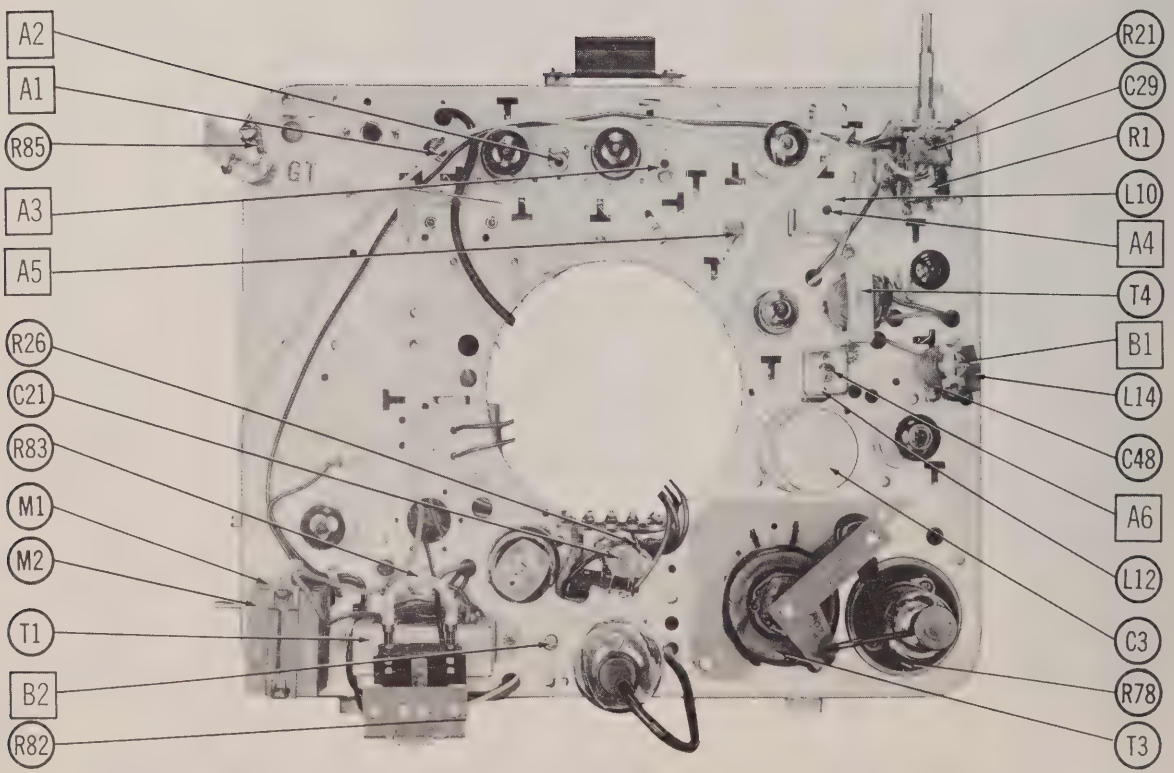
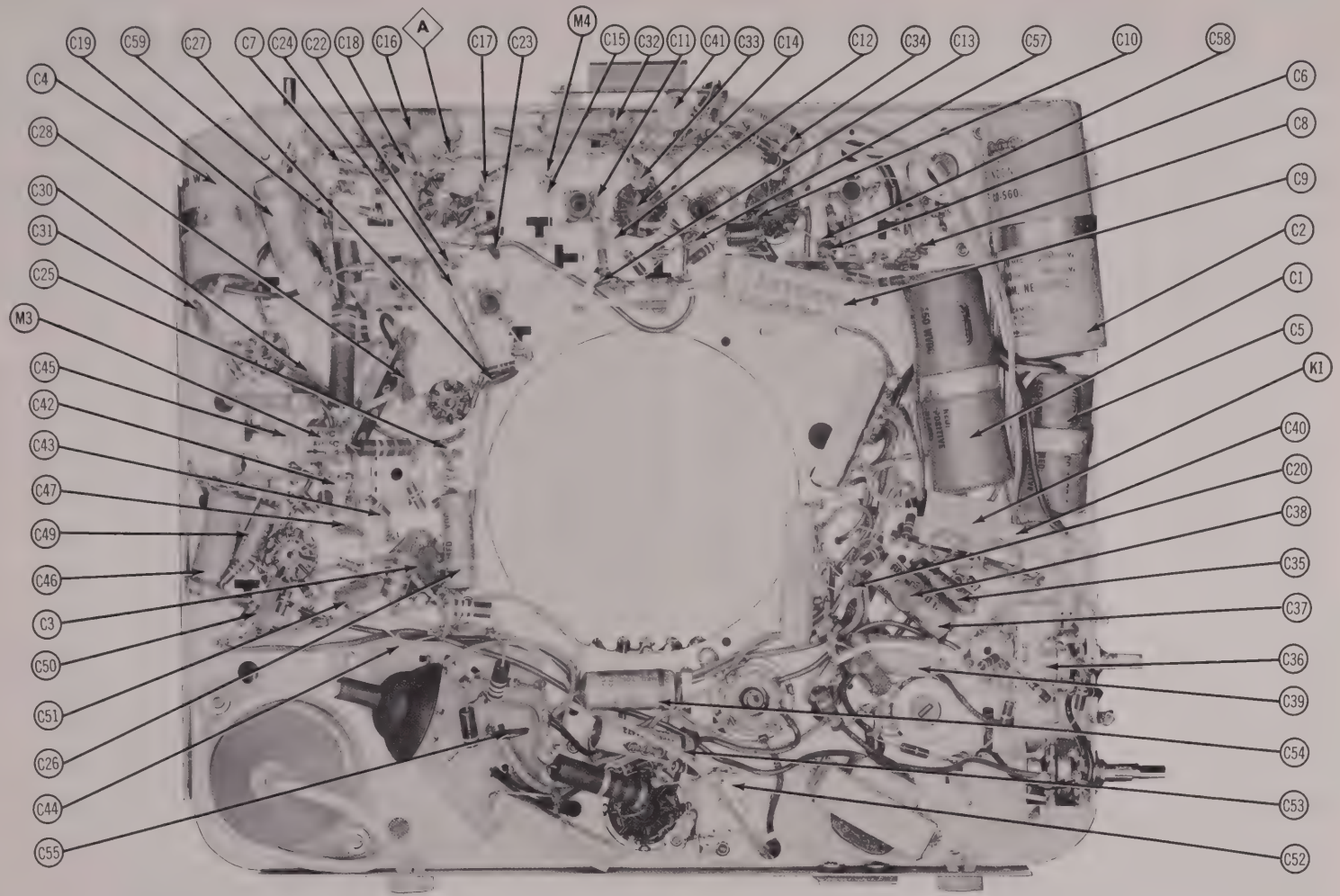


FIG.1



CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp. - Sync Amp.	5S8	
V2	2nd. Video IF Amp. - Sync Sep.	5S8	
V3	Video Output-Sound IF Amp	6AU8	
V4	Audio Det	3DT6	
V5	Audio Output	12C5	*12CU5

ITEM No	USE	TYPE	NOTES
V6	Vert. Mult.-Vert. Output	12BH7A	
V7	Horiz. Mult.	6CG7	
V8	Horiz. Output	12DQ6A	
V9	Damper	12AX4GTA	
V10	HV Rectifier	1B3GT	

* Alternate.

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V11	14WP4			14WP4/	① "Silverama" ③
				14Z P4 ②	② "Silver Screen 85"
	17BJP4			17BJP4 ①	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP	VOLT	OLYMPIC PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1	150	150	CO8523-1	PRS150V150	BR150S5	TC495	TU-150-150	MT-15150	TVA-1422
C2A	120	300	CO5603	AF1X3-99-40	BBR1X0386	W-D425		5-195	*TH2224
B	100	50						MT-05100	
C3A	a200	300	CO5601	AFH4-02-45	D0044	FP330.9		D-147	*R2626
B	a60	400				TC60		MT-4504	
C	a4	300							
C4	50	250	CO2068-2	PRS250V50	BR5025	TC59	TU-50-450	FM-4550	TVA-1713
C5	10	450	CO4022-1	PRS450V10	BR1045	TC72	TU-10-450	FM-4510	TVA-1705

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							
	CAP	VOLT	OLYMPIC PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C6	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	①
C7	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C8	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C9	22	300		PZ88N-22		CUB3P33	GEM-6022	STM-P33		
C10	330				D8-331	LU7T33	ED-330	MS-333		10%
C11	18		CO4838		TCZ-18	C20J8C	TCO-18			NPO 10%
C12	1000		CO4837			1R5DI	ED-1000	MCB355	MS-31	10%
C13	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	①
C14	1000		CO4837			1R5DI	ED-1000	MCB355	MS-31	10%
C15	4.7		CO1083	NPO-S1 4.7	TCZ-4R7	CTA8V47C	TCO-4.7	ZT-5547	5TCCB-V47	
C16	047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C17	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C18	100			N750-D1 100	DTN-100	C10TIU	TCT-100	NT-531	5TCU-T1	N750 10%
C19	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C20	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C21	5000			BPD-005	DD-502	BYA5DE	ED-005	DC525	5HK-DE	
C22	10			NPO-DI 10	DD-100	L0QJ	TCO-10	ZT-541	5TCC-Q1	10%
C23	6.8		CO4417	NPO-D1 6.8	DTZ-6R8	C10V8SC	TCO-6.8	ZT-5568	5TCCB-V68	NPO 10%
C24	330				D8-331	LU7T33	ED-330	MCB356	MS-333	10%
C25	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C26	047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C27	10000			BPD-01	DD-103	BYA5DI	ED-01	DC51	5HK-01	
C28	5000			BPD-005	DD-502	BYA5DE	ED-005	DC525	5HK-DE	
C29	680			14S7-00068	D8-681	1R5TE8	ED-680	UC-5368	1FM-368	①
C30	5000			BPD-005	DD-502	BYA5DE	ED-005	DC525	5HK-DE	
C31	10000		CO5819	BPD-01	DD-103	BYA5DI	ED-01	DC51	5HK-01	
C32	.0022	600		P688N-0022	DK-222	CUB5D22	GP-2200	STM-D22	5TM-D22	
C33	330				D8-331	LU7T33	ED-330		MS-333	10%
C34	02	400		P488N-02	DD-203	CUB4P3	ED-03	GEM-412	4TM-S3	
C35	.0047	600		P688N-0047	DK-473	CUB5D47	GP-4700	GEM-5247	6TM-D47	
C36	22	200		PZ88N-23		CUB2P22		GEM-2022	2TM-P22	
C37	035	600								10% ②
C38	10000			BPD-01	DD-103	BYA5DI	ED-01	DC51	5HK-01	③
C39	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C40	01	1000		P1088N-01	DD8I-103	CUB10I		GEM-101	10TM-S1	
C41	100			N750-D1 100	DTN-100	C10TIU	TCT-100	NT-531	5TCU-T1	N750 10%
C42	220				D8-221	LU7T33	ED-220		MS-333	10%
C43	1000		CO4837			1R5DI	ED-1000	MCB358	MS-31	10%
C44	470	1000	CO5467							10%
C45	1000		CO4837			1R5DI	ED-1000	MCB355	MS-31	10%
C46	1	200		PZ88N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C47	5000			BPD-005	DD-502	BYA5DE	ED-005	DC525	5HK-DE	
C48	3900		CO5466	1454-0039		1R5D39			MS-333	10%
C49	001	500		P568N-001	D6-102	CUB5D1	GP-1000	GEM-621	6TM-D1	
C50	680			14S7-00068	D8-681	1W5T68	ED-680	UC-5368	1FM-368	
C51	680			1454-00068	D6-681	1R5T68	ED-680		MS-368	10%
C52	01-.02									
	580		CT3526							
C53	047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C54	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C55	100	3000	CO3781							10%
C56	68	3000	CO4520							10%
C57	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C58	1000			BPD-001	DD-102	BYA5DI	ED-1000	DC521	5HK-DI	
C59	2000Q				BPD-02	DD-203	BYB5D2	ED-02		5HK-S2 ③

① Not used in some versions.
② Some versions use a single .047mfd ④ 400V to replace C37 and C38.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1500Q	½	PTK-5589	P1-7	RTV-650		■ (US)3719	Contrast
B	1meg	½		R2-25	Not Req.			Volume
C	Switch			KS-1 *	Not Req.			
R2A	2meg	½	PTK-5579	P1-67		▲	■ (US)3796	Vert. Hold
B	1meg	½		R2-51				Horiz. Hold
R3A	1 5meg	½	PTK-5581	B-743	A47-1.5meg-S	QI-128	1U56	Brightness
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R4A	2 5meg	½	PTK-5008-1	AB-83	A47-3.5meg	QI-230	TA35L	Vert. Height
B	Shaft			AK-1	FK3-1/4	TQ	Not Req.	
R5A	500Q	½	PTK-3618-3	AB-10	A47-500Q-S	QI-114	TA51L	Vert. Lin.
B	Shaft			AK-1	FK3-1	TQ	Not Req.	

* Use KR-1 on red label control only.
▲ "Concentrikit" Equivalent: K-6 Kit. Base Elements & Shafts BU-139, FS3-023 (Panel)
BU-137, RJ-103 (Rear)
● "RTA-LOC" Equivalent FB152R, OF150, RU8A, IS200, US-41.
■ "RTA-LOC" Equivalent : FB26L, OM53, RU8L, BU82.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R6	1000Q			
R7	15K			Note 1
R8	1000Q			
R9	1meg			
R10	15K			Note 1
R11	330Q			
R12	47Q			
R13	3300			Note 2
R14	330Q			
R15	180Q			
R16	8200Q			
R17	1.5meg			
R18	1meg			
R19	12K			
R20	33K	2		
R21	1500Q			
R22	33000	2		
R23	3300Q	2		
R24	150K			
R25	150K			
R26	100K			
R27	1meg			
R28	22K			
R29	150K			
R30	560K			Note 3
R31	560Q			
R32	270K	1		
R33	1meg			
R34	1meg			
R35	330Q	2		
R36	22K			
R37	2.5meg			Note 4
R38	560K			
R39	82K			
R40	82K			Note 5
R41	150K			
R42	22K			
R43	82K			
R44	82K			Note 6
R45	680K			

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R46	2 7meg	1		
R47	1.5meg			
R48	47K			
R49	12K			Note 7
R50	1.5meg			
R51	4.7meg			
R52	4.7meg			
R53	150K			
R54	560Q			
R55	1500Q	1		
R56	560Q			
R57	560Q			
R58	560K			
R59	820K			
R60	100K			
R61	1meg			
R62	82K			
R63	68000	1		
R64	820Q			
R65	470K			
R66	1meg			
R67	68K			
R68	82K			
R69	10K			
R70	470K			
R71	47Q			
R72	8200Q	2		
R73	330K	1		
R74	330K	1		
R75	33Q	1		
R76	470K			
R77	4700Q			
R78	3.3Q	1	RE5419	
R79	20Q	10	RE5814	
R80	20Q	10	RE5814	
R81	17Q	10	RE5815	Note 8
R82	470K			Note 3
R83	7.6Q		RE5823	
R84	470K			Note 3
R85	470K			Note 8

Note 1 Some versions may use 12K in this application
Note 2 Not used in some versions.
Note 3 Some versions may use 68Q in this application
Note 4 Some versions may use 150K in this application.
Note 5 Some versions may use 560K in this application.
Note 6. Some versions may use 820K in this application.
Note 7. Some versions may use 8200Q in this application.
Note 8. Chassis GTU, GUU use 10W (Part #R5815) in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No	Thordarson PART No	Triad PART No	
T1	Vert. Output	TR-3689	21900 ①	A-3039	V3L2	A-8141	46S75	A-109X	
				2 5	2-3	2-3		2	
T2A	Yoke-Horiz (18MM)	CL-3800-4	DF807	MDF-82	T90F10/43	DY-15A	Y-16	Y-41 &	
B	(90°) Vert.(30MM)		④ ⑤	④ ⑤	④ ⑤	④ ⑤	④ ⑤	HW3 ③	
	Yoke Plug	PL5866							
	Yoke Clamp	SP5672						CL-1	
M6	Rear Cover & Centering Device	SP5640						YC-1	
T3	Horiz. Output	TR-5598							

① Use 18 to 1 turns ratio
② Drill new mounting hole(s).
③ Stancor uses lead of yoke from ground. Connect green lead of yoke and green lead of vert. output autoformer to junction of capacitor C5 and resistor R5. Connect red lead to yellow yead of yoke. Connect blue lead to plate of vert. output tube.
④ Use original yoke damping network, if necessary Use original rear cover and centering device.
⑤ Connect same as original.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		OLYMPIC PART No.	REPLACEMENT DATA						NOTES
	PRI	SEC.		Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	
T4	2200Q	3-4Q	TR5820	ZI101	A-3035	AU-805	A-3332	24S53	S-12X	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		OLYMPIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	CL1535	18-1036	TV-180	6176	VP-1	36 Microhenries
L2	1st. Video IF	CL4783-1	17-4524	TV-131	6202	VF-4	
L3	2nd. Video IF	CL4611	17-4522	TV-130	6219	VF-3	
L4	3rd. Video IF	CL4781	17-4523	TV-130	6219	VF-3	
L5	Resonant Choke	CK4235					1.6 Microhenries

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		OLYMPIC PART No	Meissner PART No	Merit PART No.	Miller PART No.	Ram PART No.	
L6	Series Peaking Coil	CL1356	19-3180 *	TV-184 *	6180 *	VP-5 *	180 Microhenries, wound on 12K resistor
L7	Shunt Peaking Coil	CL2614	19-3500	TV-103	6174	VP-8	500 Microhenries
L8	Series Peaking Coil	CL2403	19-3300	TV-199	6153		300 Microhenries
L9	Shunt Peaking Coil	CL2614	19-3500	TV-103	6174	VP-8	500 Microhenries
L10	1st. Sound IF	CL2614					
L11	2nd. Sound IF	CL4031	17-3412				
L12	Quadrature Coil	CL3603-1			1481	SD-5	
L13	Fil. Choke	CL2427	19-1001	BC-582	4004		1.5 Microhenries

* Parallel with 12K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI	SEC.	OLYMPIC PART No	Meissner PART No	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No	
LJ4	65Q		CL5464	19-1576	TV-163	6210	H-102	HS-5	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (%)	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No	Thordarson PART No	Triad PART No
LJ5	.185A	54Q	.6 Hy.	CK4047				C-2327		C-24X

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	3000umf. 5000umf, 6000umf, 23K, 8200Q, 8200Q	PC3435	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-310 PC-104 1U5T3G 1408-01 V-1

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT (Measured)	OLYMPIC PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.		
M1	.185A	RF5621 ①	5002 ①	1N1007 ②	SD94A ②	250A ①		① Selenium type.
M2	.185A	RF5621 ①	5003 ①	1N1007 ②	SD94A ②	250A ①		② Germanium type.
						M500 ②		③ Silicon type.
M3		RF5485 ③	1215 ① ③			1T1 ① ③		④ Two required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		OLYMPIC PART No.	CBS PART No.	SYLVANIA PART No.	
M4	1N64	1N64	1N64	1N64	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M5	Tuner	CL5593	VHF - Ch. GT
	Tuner	CL5594	VHF - Ch. GU
	Tuner	CL5582	UHF-VHF - Ch. GTU
	Tuner	CL5583	UHF-VHF - Ch. GUU
M6	Rear Cover & Centering Device	PP5640	
	Antenna	PP5810	Telescoping

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

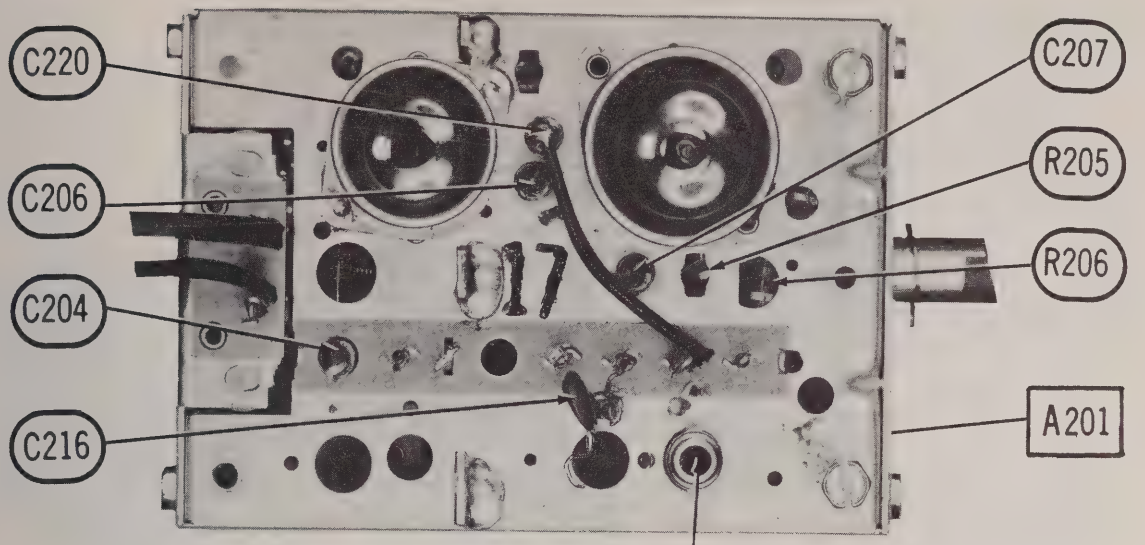
NAME	PART NO	DESCRIPTION
Safety Glass	PP5719	Models 14TT9I, U
Safety Glass	PP5720	Models 17TU94, U
Safety Glass	PP5721-1	Models 14TT92, U
Safety Glass	PP5722-1	Models 17TU93, U
Mask	PP5715	Models 14TT9I, U
Mask	PP5716	Models 17TU94, U
Knob	KN5183	Fine Tuning - Model 17TU94M
Knob	KN5183-1	VBF Fine Tuning - Models 14TT9I, 92, 17TU93, 94, 94B, 94M
Knob	KN5694	Channel Selector - Models 14TT92, 17TU93
Knob	KN5691-1	Channel Selector - Models 14TT9I, 17TU94B
Knob	KN5694-2	Channel Selector - Model 17TU94M
Knob	KN5692	Channel Selector - Model 17TU93U
Knob	KN5692-1	Channel Selector - Model 17TU94BU
Knob	KN5694-2	Channel Selector - Model 17TU94MU
Knob	KN5695	UHF Dial Indicator - Models 14TT9U, 9U, 17TU93U, 94BU, 94MU, 94U
Knob	KN5697	On-off-volume - Models 14TT92, U, 17TU93, U
Knob	KN5697-1	On-off-volume - Models 14TT9I, U, 17TU94B, BU
Knob	KN5697-2	On-off-volume - Models 17TU94M, MU
Knob	KN5700	Contrast - All models except 17TU94M, MU
Knob	KN5700-1	Contrast - Model 17TU94M, MU
Knob	KN5703	Brightness - Models 14TT92, U, 17TU93, U
Knob	KN5703-1	Brightness - Models 14TT9I, U, 17TU94B, BU
Knob	KN5703-2	Brightness - Models 17TU94M, MU
Knob	KN5707	Vert. - All models except 17TU94M, MU
Knob	KN5707-1	Vert. - Models 17TU94M, MU
Knob	KN5710	Horiz. - Models 14TT92, U, 17TU93, U
Knob	KN5710-1	Horiz. - Models 14TT9I, U, 17TU94B, BU
Knob	KN5710-2	Horiz. - Models 17TU94M, MU

WIRING DATA

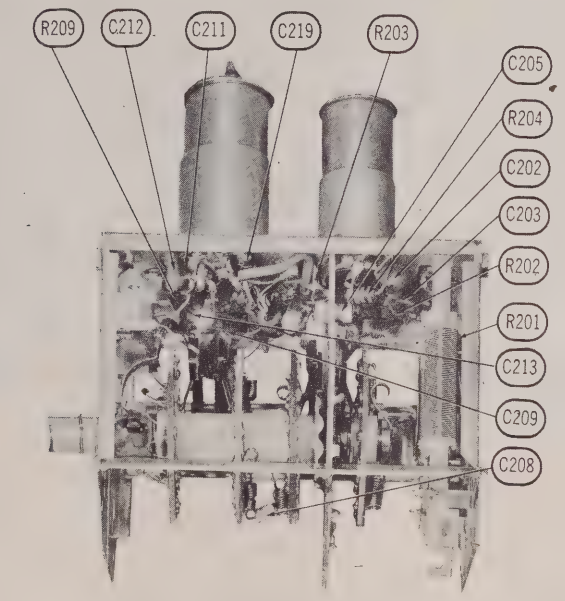
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8685 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Q Tuner Input Lead	Use BELDEN No. 8225
300Q Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8456 (Flat) or 8484 (Round) - 4 Conductor 8455 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

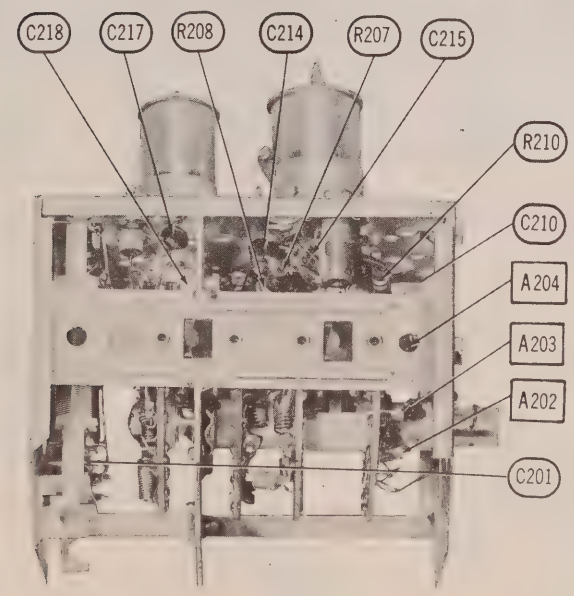
OLYMPIC MODELS 14TT9I, U, 14TT92, U, 17TU93, U, 17TU94, B, BU, M, MU, U (Ch. GT, GTU, GU, GUU)

FOLDER 2



MIXER PLATE COIL





RF TUNER

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.

OSCILLATOR ALIGNMENT

Set the fine tuning to the center of its range. (To do so, turn the fine tuning so that the flat portion of the fine tuning shaft is in a vertical plane.)
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K. (Across video det. load).	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
2.	"	"	85MC	83.25MC 87.75MC	6	"	A202	"
3.	"	"	69MC	67.25MC 71.75MC	4	"	A203	"
4.	"	"	57MC	55.25MC 59.75MC	2	"	A204	"

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

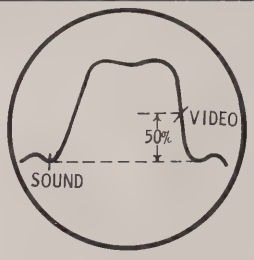


FIG.201

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2CY5	
V202	Mixer-Osc.	5AT8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	OLYMPIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	47			N750-DI 47	TCN-47	C10Q47U	TC7-47	NT-5447	5TCU-Q47	N750
C202	2.7									
C203	8					C10V8C				
C204	1000			EF-001	MFT-1000				503C-D1	
C205	1000			EF-001	MFT-1000				503C-D1	
C206	1000			EF-001	MFT-1000				503C-D1	
C207	1000			EF-001	MFT-1000				503C-D1	
C208	1.8									
C209	51									NPO
C210	5			NPO-DI 5	TCZ-4R7	C10V5C	TCO-5	ZT-555	5TCCB-V5	NPO
C211	6.8			NPO-DI 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	10%
C212	1.5									N470
C213	1.2									
C214										
C215	18					C10Q18C				NPO
C216	82									
C217	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C218	1000			EF-001	MFT-1000				503C-D1	
C219	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C220	1000			EF-001	MFT-1000				503C-D1	

RESISTORS

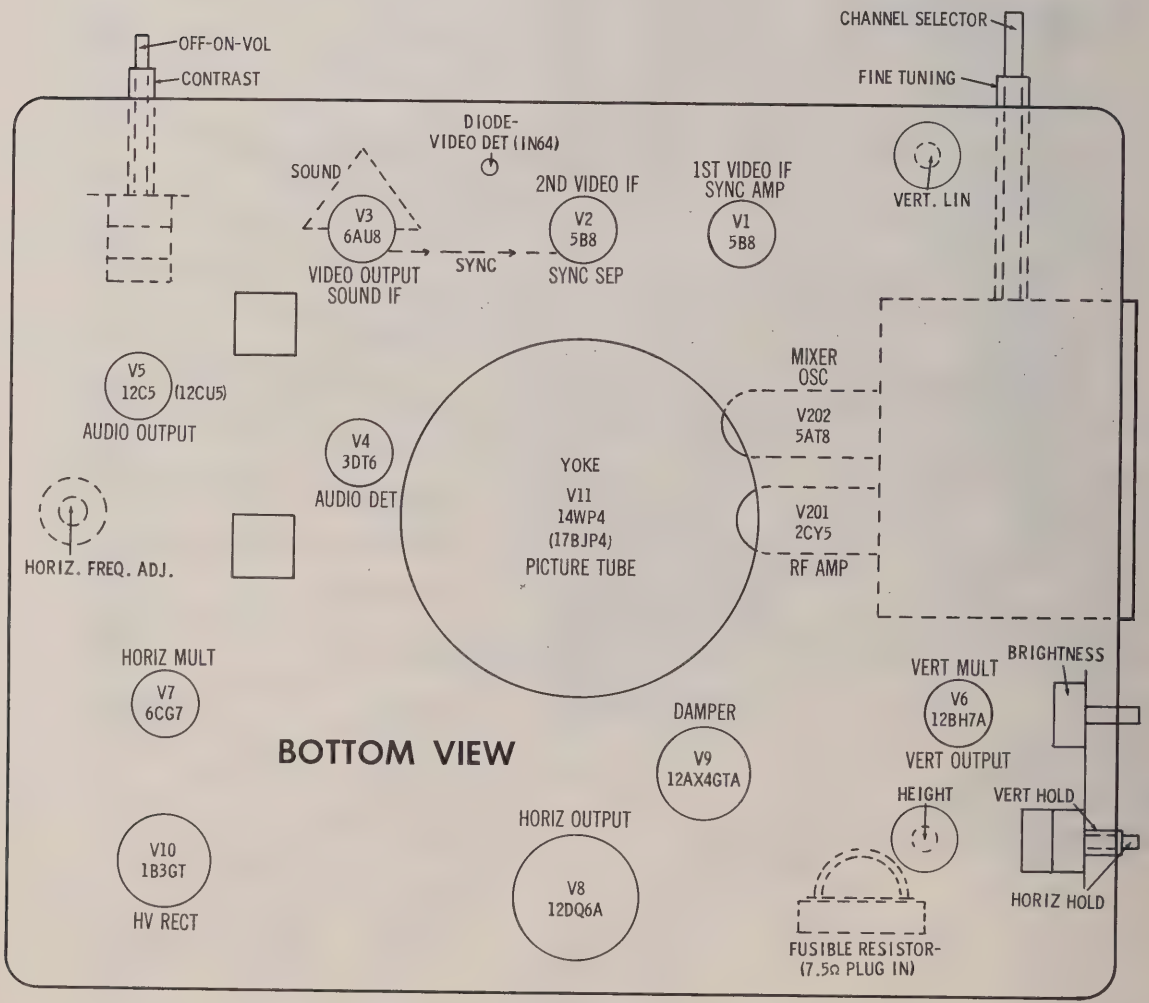
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	OLYMPIC PART No.	NOTES
R201	680K			
R202	15K			
R203	18K			
R204	47K			
R205	4700Ω			
R206	100K			
R207	1800Ω			
R208	470Ω			
R209	15K			
R210	4700Ω			

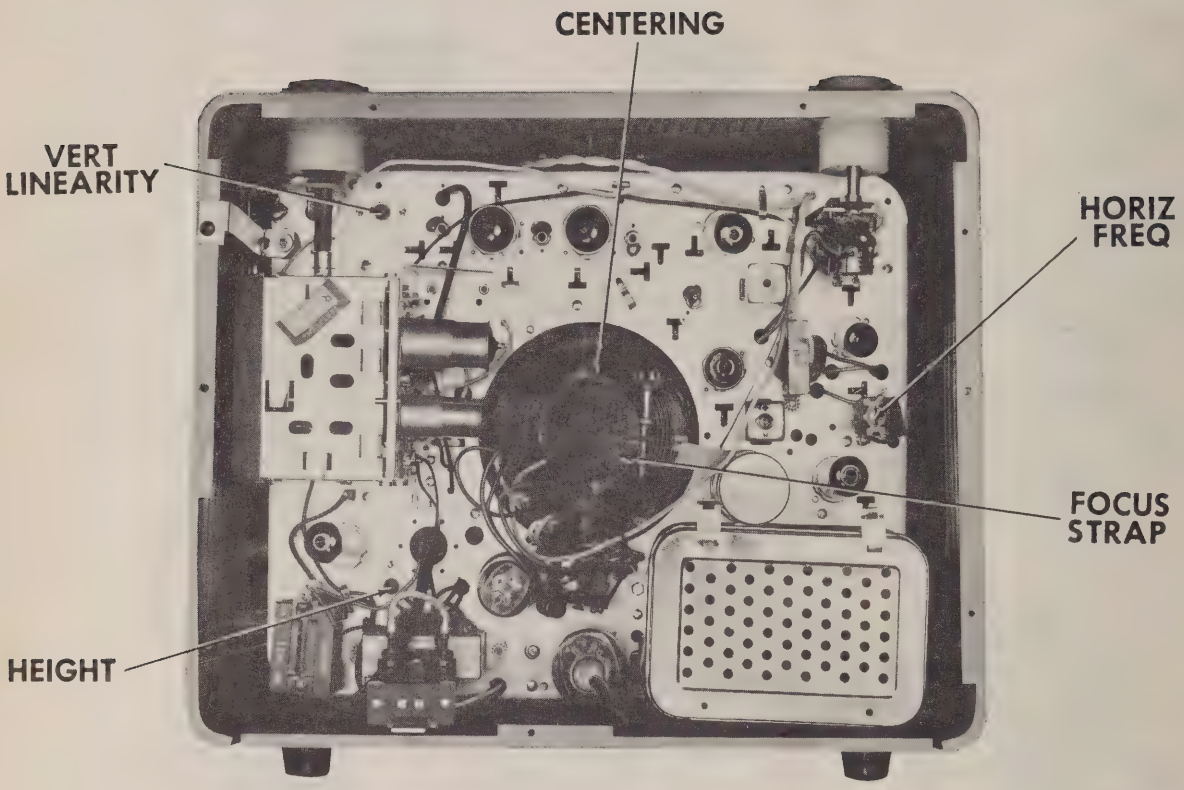
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5B8	0Ω	180K	▪ 17K	40Ω	41Ω	1meg	47Ω	▪ 660Ω	▪ 660Ω
V2	5B8	0Ω	2.7meg	▪ 40K	41Ω	42Ω	.1Ω	180Ω	▪ 330Ω	▪ 330Ω
V3	6AU8	0Ω	1meg	▪ 22K	42Ω	43Ω	• 100Ω	550K	†33K	†6600Ω
V4	3DT6	3.2Ω	560Ω	43Ω	44Ω	†270K	▪ 0Ω	560K		
V5	12C5	¶	500K	44Ω	47Ω	500K	†390Ω	†530Ω		
V6	12BH7A	‡2700Ω	1.5meg	• 2500Ω	74Ω	74Ω	•‡2meg	•1.2meg	47K	76Ω
V7	6CG7	†82K	60K	820Ω	49Ω	47Ω	†6900Ω	1.5meg	820Ω	0Ω
V8	12DQ6A	TP	69Ω	NC	†8200Ω	470K	TP	72Ω	0Ω	TOP CAP ‡53Ω
V9	12AX4GTA	NC	NC	¶	NC	†0Ω	NC	74Ω	72Ω	
V10	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡433Ω
V11	14WP4	0Ω	160K	PIN 6 ‡100K	PIN 10 ‡100K	PIN 11 • 330K	PIN 12 1.5Ω			
V201	2CY5	1meg	0Ω	20Ω	19.5Ω	▪ 0Ω	▪ 18K	0Ω		
V202	5AT8	15K	▪ 5200Ω	0Ω	19.5Ω	18.5Ω	▪ 2400Ω	▪800Ω	[illegible]	100K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDTION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 270V SOURCE.
‡ MEASURED FROM PIN 3 OF V9.
▪ MEASURED FROM 135V SOURCE.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Connect a clip lead from terminal 1 to terminal 3 of the Horiz. AFC Rectifier (M3).

Connect a 1000Ω resistor across the horizontal frequency coil (L14).

Adjust the horizontal hold control to the point where the picture appears to float back and forth across the screen. Remove the resistor from across L14 and adjust the horizontal frequency slug (B1) until the picture again appears to float back and forth across the screen.

Remove the clip lead from across the rectifier and readjust the horizontal hold control, if necessary.

Adjust horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white (drive) lines or compression near the center of the screen. If neither of these conditions appear, adjust B2 for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the front. Remove 2 wood screws holding the knob escutcheon and remove remaining 4 knobs.

2. Remove 5 wood screws holding the rear cover. Remove the rear cover.

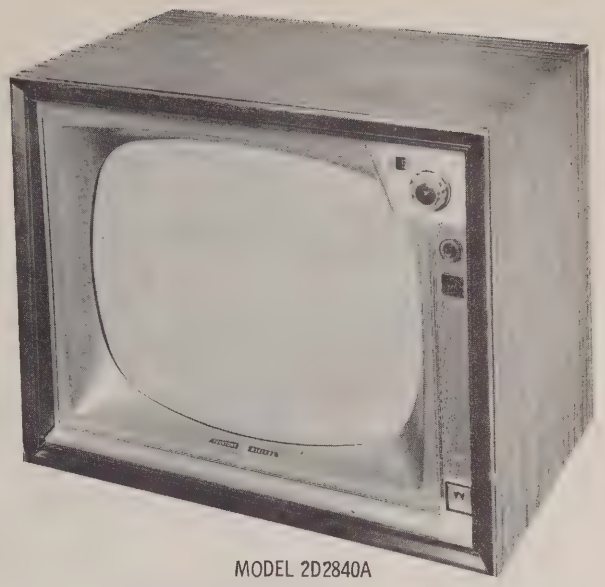
3. Loosen 2 wood screws holding the antenna terminal board.

4. Remove speaker leads.

5. Remove 2 wood screws holding the top chassis braces.

6. Remove 4 chassis bolts from the bottom.

7. Remove the chassis.



MODEL 2D2840A

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Truetone	MODELS 2D1840A, 2D1841A, 2D1842A, 2D1843A, 2D1844A, 2D1845A, 2D2840A, 2D2841A, 2D2842A, 2D2843A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.	
TYPE SET	Television Receiver	
TUBES	Eighteen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 155 Watts, 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim strip at the top of the safety glass. Tilt the glass out at the top and lift up to remove.

SPECIAL ADJUSTMENTS

A. Focus
Adjust the beam alignment magnet on the neck of the picture tube for best focus.

B. Range
Observe the picture and advance the range control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

C. Sync Stab Adjustment
Tune in the strongest TV station operating in the area. Adjust controls for a normal picture. Adjust the sync stab control clockwise until bending or jitter occurs. Back off from this setting until the picture is stable. Check operation on all channels operating in the area and readjust if necessary.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSE DEVICE

A circuit breaker is used for LV power supply protection and may be reset by depressing the reset button. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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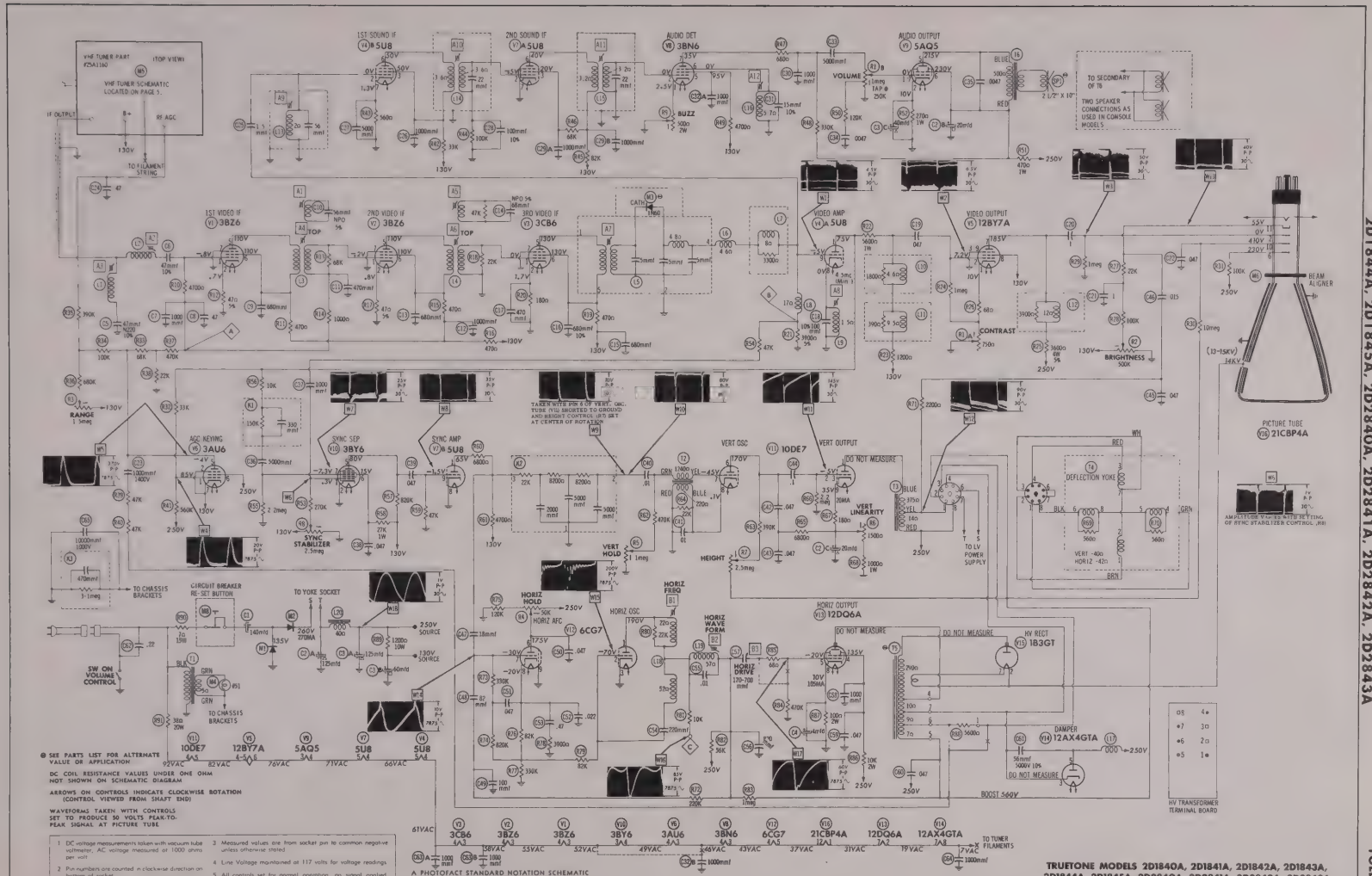
TRUETONE MODELS 2D1840A, 2D1841A, 2D1842A, 2D1843A, 2D1844A, 2D1845A, 2D2840A, 2D2841A, 2D2842A, 2D2843A

SET 395 FOLDER 3



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

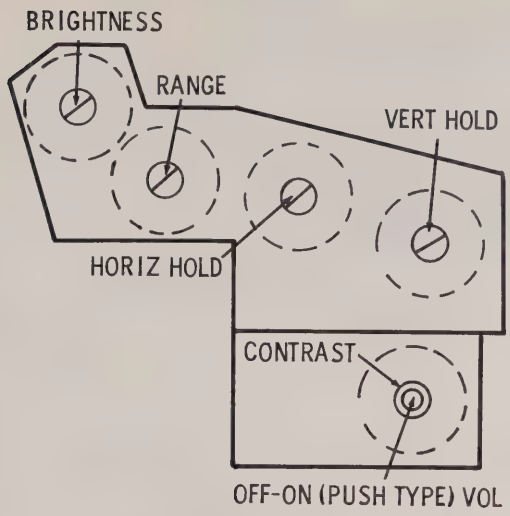
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

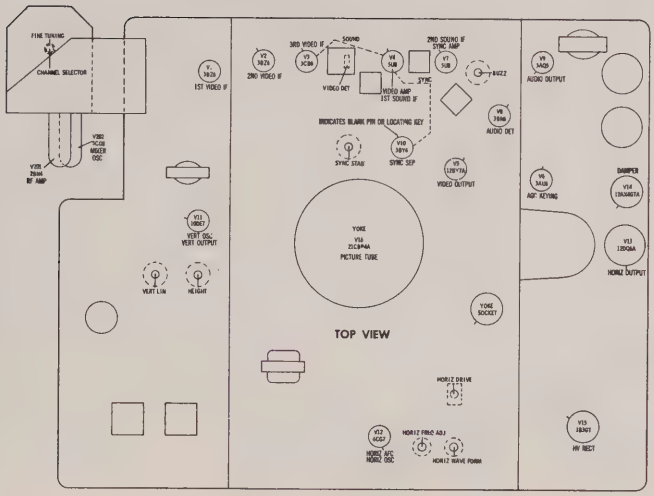
V11	V5	V9	V7	V4
10DE7	12BY7A	5AQ5	5U8	5U8
6AS6	6AS6	3A8	5A8	5A8
92VAC	82VAC	76VAC	71VAC	66VAC

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

V3	V2	V1	V10	V6	V8	V12	V16	V13	V14
3CB6	3BZ6	3BZ6	3BY6	3AU6	3BN6	6CG7	21CBP4A	12DQ6A	12AX4GTA
6A2	6A2	6A2	5A8	6A3	6A2	6A5	12A1	7A2	7A8
158VAC	155VAC	152VAC	149VAC	146VAC	143VAC	137VAC	131VAC	119VAC	7VAC

TUBE PLACEMENT CHART





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

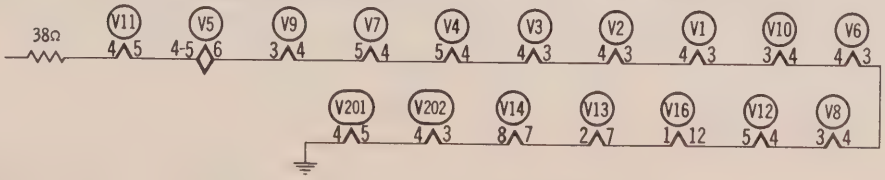
POWER SUPPLY FAILURE
No raster, no sound - **Circuit Breaker (M8), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, V3, Diode (M3)**
No pic, no sound, has snow - **V201, V202, V1**
No pic, has sound, has raster - **V4, V5, V16**
Has pic, no sound - **V4, V7, V8, V9**
Overloaded picture - **V6**

SYNC FAILURE
No vert. sync - **V10, V7**
No horiz. sync - **V10, V7, V12**
No vert. or horiz. sync - **V10, V7**

SWEEP FAILURE
No raster, has sound - **V12, V13, V14, V15, V16**
No vertical deflection - **V11**
Poor vert. linearity or foldover - **V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, M1, M2**
Vert. off freq. - **V11**
Horiz. off freq. - **V12**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru det. probe (Fig. 1) to pin 5 (plate) of 3BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC 45.75MC 47.25MC	"	"	A2, A3, & Mixer Plate Coil	Adjust for response similar to Fig. 2. Mixer plate coil and A2 affects the shape of the top. A3 is adjusted to position the 41.25MC marker. This adjustment must be made correctly or the sound rejection will not be correct. The 45.75MC marker must be exactly on peak.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. DC probe of VTVM thru 10K to same point. Common to chassis. (Across video det. load).	A4	Increase bias at point A to 4.5 volts. Adjust sweep output for -2 volts DC at point Ⓑ. Adjust A4 for maximum amplitude at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM amplitude at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A2 thru A7 for desired response. A7 controls the symmetry of the top, A6 controls position of the 45.75MC marker. A4 controls position of the 42.4MC marker (this slug will seldom need retouching. CAUTION: The position of 44.5MC marker is very critical (98%).

4.5MC TRAP ALIGNMENT

Use 0-10 volts AC scale on VTVM.
Set contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.005mfd	High side to pin 9 (grid) of 5U8 (V4). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV signal and reduce signal level at the antenna terminals by use of an attenuator or similar device until a hiss similar to super regeneration is heard in the sound.
Adjust A9, A10, A11 and A12 for maximum undistorted sound.
Adjust the buzz control (R9) for MINIMUM buzz.

TUNER ALINGMENT INSTRUCTIONS LOCATED ON PAGE 6.

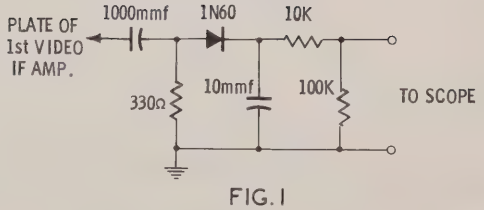


FIG.1

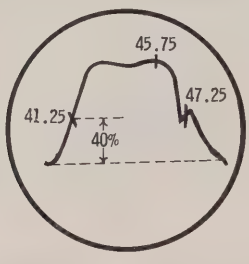


FIG.2

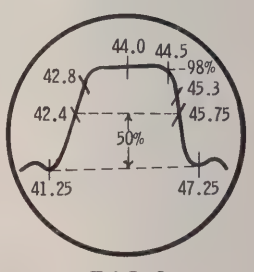


FIG.3

TRUETONE MODELS 2D1840A, 2D1841A, 2D1842A, 2D1843A, 2D1844A, 2D1845A, 2D2840A, 2D2841A, 2D2842A, 2D2843A

TUNER SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

FOLDER 3

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 1.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A201, A202	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201.
2.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 202) to plate of 1st. IF tube. Low side to chassis.	A203	Adjust A203 to obtain MINIMUM response on the scope.
3.	"	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A204	Adjust for maximum amplitude fof response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 4.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

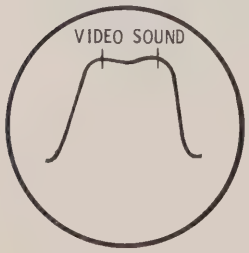


FIG.201

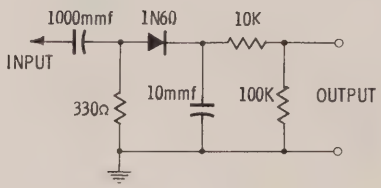


FIG.202

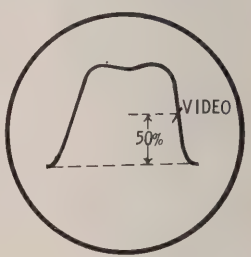
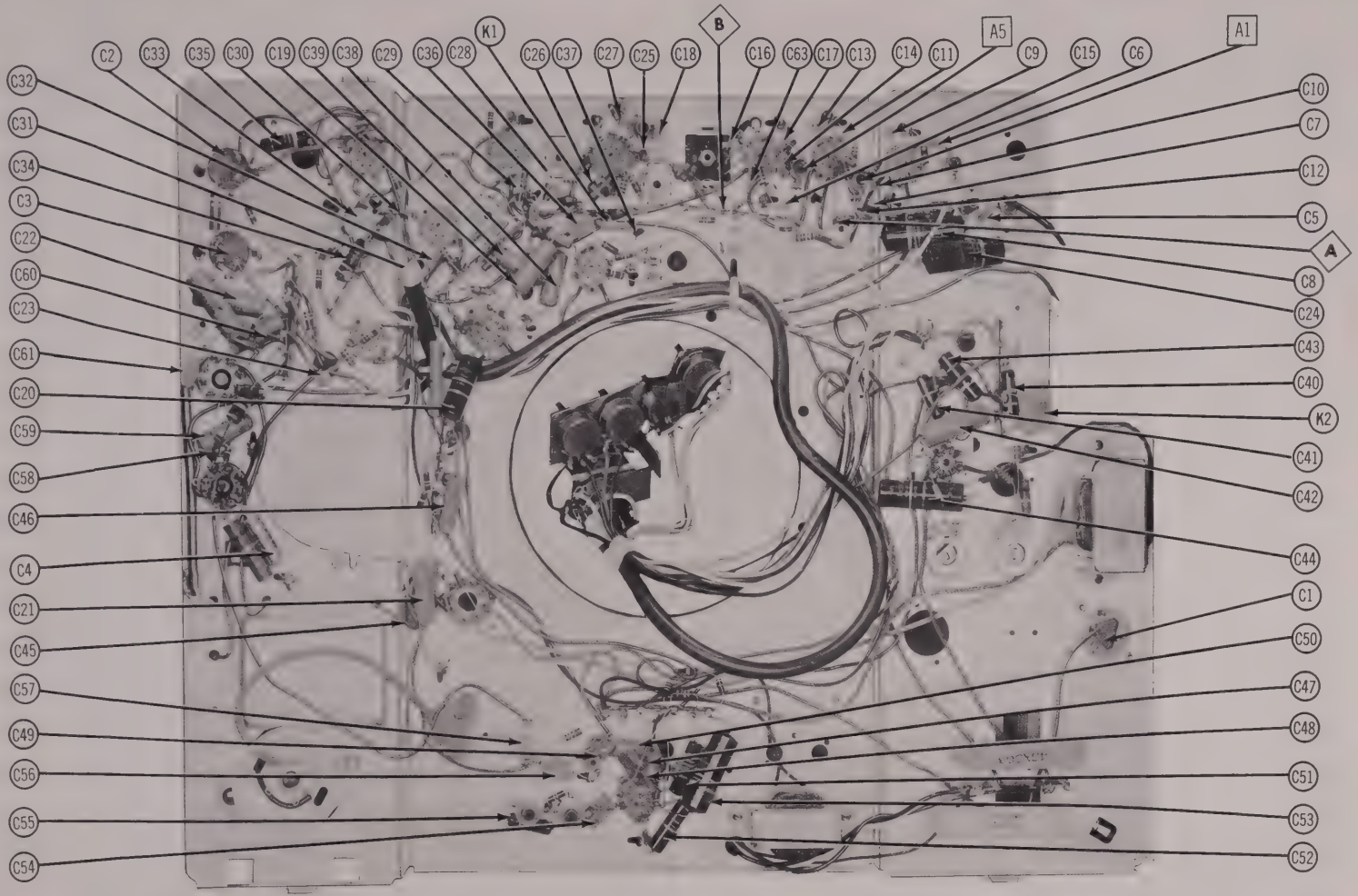
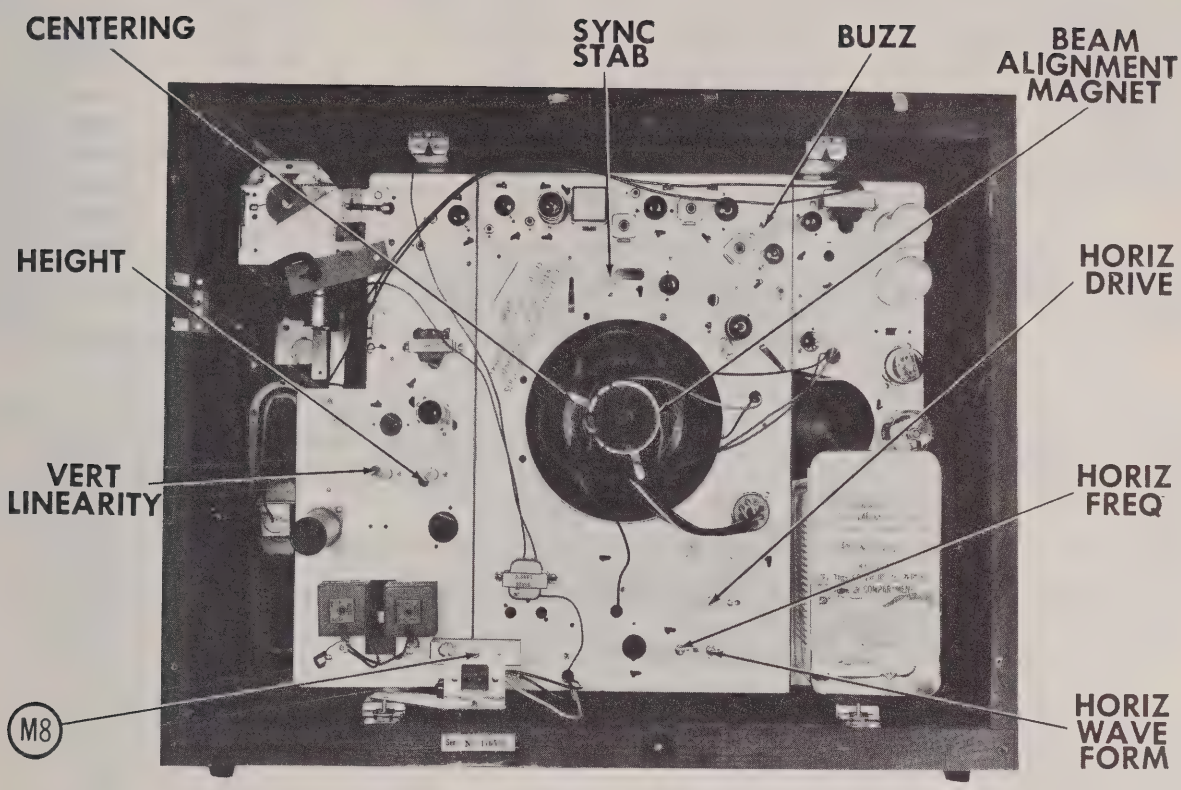


FIG.203



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Turn the horizontal hold control to the center of its range.

Connect a clip lead across the horizontal waveform coil (L19). Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Remove the clip lead from L19. Connect the vertical amplifier of the scope thru a low capacity probe to point Ⓒ. Low side to chassis.

Adjust the horizontal waveform slug (B2) for equal amplitudes of the round and sharp peaks of the waveform as shown in Fig. 4. While making this adjustment, keep the picture in sync with the horizontal hold control and B1.

Turn the horizontal drive trimmer (B3) clockwise as far as possible without the presence of vertical white lines or compression near the center of the raster.

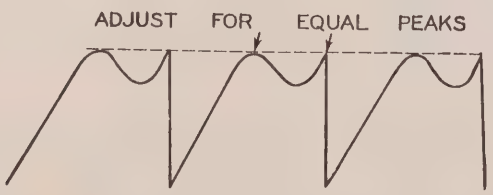


FIG. 4

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3BZ6	
V2	2nd Video IF Amp	3BZ6	
V3	3rd Video IF Amp	3CB6	
V4	Video Amp - 1st Sound IF Amp	3U6	
V5	Video Output	12BY7A	
V6	AGC Keying	3AU6	
V7	2nd Sound IF Amp - Sync Amp	3U6	

ITEM No	USE	TYPE	NOTES
V8	Audio Det	3BN6	
V9	Audio Output	3AQ5	
V10	Sync Sep.	3BY6	
V11	Vert Osc - Vert Output	10DE7	
V12	Horiz AFC-Horiz. Osc	6CG7	
V13	Horiz Output	12DQ6A	
V14	Damper	12AX4GTA	
V15	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	TRUETONE PART No	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	
V16	21CBP4A		21CBP4-A 1	21CBP4A 2	1 Silverama® B 2 Silver Screen 85 '

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	VOLT	REPLACEMENT DATA: TRUETONE PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No.
C1	140	150	45X421	AFHSI-33	XA2561	FP117	TMS-24	T-055	TVL-1428
C3A	4125	300	45X421	AFH4-03-60	XC0733 2	FP218 TC36		Q-222 2	*R2376
B	420	300						MT-0520	
C	420	50							
C3A	4125	300	45X420	AFH3-99-83	XC0733 4	FP420 76 TC65	TMT-26	T-115	TVL-3574 6
B	460	300						MT-0550	
C	460	50							
C4	4	50	45X418	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TE-1302.1

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING CAP	VOLT	REPLACEMENT DATA: TRUETONE PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C5	47		47X803	NPO-S1 47	DTZ-47	CTA8Q47C	TCO-47		5GA-Q47	N220 10%
C6	47		47X703	NPO-D1 47	DTZ-47	CTA8Q47D	TCO-47		5GA-Q47	10%
C7	1000		80X2	BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-D1	
C8	47	200	RCP10M4748M	P488N-47		CUB2P47		GEM-4047	2TM-P47	
C9	680		80X5	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C10	56						TCO-56			NPO 5%
C11	470		80X4	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C12	1000		80X1	BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-D1	
C13	680		80X5	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C14	68				DTZ-68		TCO-68			NPO 5%
C15	680		80X5	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C16	680		80X15				ED-680			10%
C17	470		80X4	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C18	100		47X804	NPO-S1100	D6-101	CTA8T1C	GP-100	ZT-531	5TCC-T1	10%
C19	047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C20	1	400	RCP10M4104M	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C21	1	400	RCP10M4105M	P488N-1	DF-104	CUB2P1		GEM-401	2TM-P1	
C22	047	600	RCP10M6473M	P688N-047	DF-503	CUB8S47		GEM-6147	6TM-S47	
C23	1000	1400	47X703	HVD-15-100	DD30-102	HVB1S01	HDL5-1000	DC3021	20GA-D1	
C24	47	200	RCP10M2474M	P488N-47		CUB2P47		GEM-2047	2TM-P47	
C25	1 5		47X584	NPO-S1 1 5	TCZ-1R5	CTA8V1C	TCO-15	ZT-5515	5TCCB-V15	
C26	1000		80X2	BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-D1	
C27	5000		47X507	BPD-005	DD-502	BYA10D6	GP-5000	DC525	5HK-D5	
C28	100		47X804	NPO-S1100	D6-101	CTA8T1C	GP-100	ZT-531	5TCC-T1	10%
C29A	1000		80X2-2X001	BPD-001	DD2-102	BYC9D1D	ED2-001	DCD-521	5HK-Z1	
B	1000									
C30	1000		80X1	BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-D1	
C31	15		47X672	NPO-D1 15	DD-150	C10QS5C	ED-15		5TCC-Q15	10%
C32A	1000		80X3	BPD-2X001	DD2-102	BYC9D1D	ED2-001	DCD-521	5HK-Z1	
B	1000									
C33	5000		47X507	BPD-005	DD-502	BYA10D6	GP-5000	DC525	5HK-D5	
C34	0047	400	RCP10M4472M	P488N-0047	D6-472	CUB4D47	GP-4700	GEM-6247	6TM-D47	
C35	0047	600	RCP10M6472M	P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C36	5000		47X507	BPD-005	DD-502	BYA10D6	GP-5000	DC525	5HK-D6	
C37	1000		80X2	BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-D1	
C38	047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C39	047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C40	01	400	RCP10M403M	P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C41	01	400	RCP10M403M	P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C42	047	600	RCP10M6473M	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C43	047	200	RCP10M2473M	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C44	1	600	RCP10M606M	P686N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C45	047	400	RCP10M6473M	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C46	015	600	RCP10M653M	P688N-015		CUB0S15		GEM-6115	6TM-S15	
C47	18		RCM20B180K	1468-00018	DD-180	5WSQ18	CY10C180J		MS-418	
C48	82		RCM20B820K	1468-000082	DD-820	5WSQ82	CY10C820J		MS-482	
C49	100		RCM20B101K	1468-00001	DD-101	5WS71	CY10C101J	MC235	MS-31	
C50	047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C51	047	200	RCP10M2473M	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C52	022	200	RCP10M2223M	P288N-022		CUB2S22		GEM-4223	2TM-S22	
C53	47	200	RCP10M2474M	P288N-47		CUB2S47		GEM-2047	2TM-P47	
C54	220		RCM20B221K	1468-00022	DD-221	5WS722	CY10C221K		MS-322	
C55	047	400	RCP10M4503M	P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C56	820		RCM20B821K	1468-00082	DD-821	1WST82	CY15C821K		MS-382	
C57	170-700		17AZ7I							
C58	1000		80X1	BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-D1	
C59	047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C60	047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C61	58	5000	47X755							10%
C62	22	400	RCP10M4224M	P488N-22		CUB4P22		GEM-4022	4TM-P22	
C63A	1000		80X3	BPD-2X001	DD2-102	BYC9D1D	ED2-001	DCD521	5HK-Z1	
B	1000									
C64	1000		80X1	BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-D1	
C65	10000	1000	47Z615		DD-103	BYA10S1M			10HKB-S1	

CONTROLS

ITEM No	RATING RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	INSTALLATION NOTES
R1A	750Ω		T8X38		RTV-948		UR11B	Contrast
B	Imeg				Not Req.			Volume-tap ② 250K
C	Switch				Not Req.			
R2A	500K		40X436	AB-50	A47-500K-S	QU-133	U50	Brightness
B	Shaft			AK-8 *	RS-3/16 *	NQ *	DS-37	
R3A	1.5meg		40X450	AB-745	A47-1.5meg-S	QU-138	U58	Range
B	Shaft			AK-8 *	RS-3/16 *	NQ *	DS-37	
R4A	50K		40X427	AB-31	A47-50K-S	QU-128	U35	Horiz Hold
B	Shaft			AK-8 *	RS-3/16	NQ *	DS-37	
R5A	1meg		40X438	AB-69	A47-1meg-S	QU-137	U54	Vert Hold
B	Shaft			AK-8 *	RS-3/16 *	NQ *	DS-37	
R6A	1500Ω		40X399	AB-6	A47-1500S	QU-100	PTA15L	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R7A	2.5meg		40X398	AB-88	A47-2.5meg -S	QU-359	PTA35L	Height
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R8A	2.5meg		40X398	AB-88	A47-2.5meg -S	QU-359	PTA35L	Sync Stabilizer
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R9	500Ω	4(WW)	40X397		35-500		FL-600	Buzz

* File shaft flat as required.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	TRUETONE PART No.	NOTES
R20	4700Ω		B8447 2	
R21	470Ω		B8547	
R22	47Ω 5%		B8347 0	
R23	68K		B8468	
R24	1000Ω		B8502	
R25	470Ω		B8547	
R26	470Ω		B8547	
R27	47Ω 5%		B8347 0	
R28	22 K		B8422	
R29	1meg		B8405	
R30	10meg		B8506	
R31	3900Ω 5%		B8392	
R32	5600Ω	1	C8562	
R33	120Ω		B8122	
R34	1meg		B8405	
R35	3600Ω 5%	4	43X301	
R36	68K		B8468	
R37	470K		B8474	
R38	22K		B8422	
R39	47K		B8473	
R40	47K		B8473	
R41	560K		B8456	
R42	33K		B8433	
R43	56Ω		B8561	
R44	100K		B8504	
R45	82K		B8482	
R46	68K		B8468	
R47	680Ω		B8681	
R48	330K		B8434	
R49	4700Ω		B8472	
R50	120K		B8424	

ITEM No.	RATING OHMS	WATT	TRUETONE PART No.	NOTES
R51	470Ω	1	C8547 1	
R52	270Ω	1	C8271	
R53	270K		B8474	
R54	47K		B8473	
R55	2.5meg		B8425	
R56	10K		B8403	
R57	820K		B8482	
R58	27K	1	C8473	
R59	47K		B8473	
R60	6800Ω		B8682	
R61	4700Ω		B8472	
R62	470K		B8474	
R63	330K		B8434	
R64	22K		B8422	
R65	6800Ω		B8682	
R66	2.2meg		B8225	
R67	180Ω		B8181	
R68	100K	1	C8403	
R69	560Ω			
R70	560Ω			
R71	3200Ω		B8322	
R72	220K		B8424	
R73	330K		B8434	
R74	820K		B8424	
R75	130K		B8124	
R76	56K		B8463	
R77	330K		B8334	
R78	3900Ω		B8392	
R79	82K		B8423	
R80	22K		B8223	
R81	10K		B8103	
R82	56K		B8563	
R83	1meg		B8405	
R84	470K		B8474	
R85	68Ω		B8680	
R86	10K	2	D8403	
R87	100Ω	2	D8401	
R88	5600Ω		B8562	
R89	1200Ω	10	43X396	
R90	7Ω	15	43X303	
R91	39Ω	20	43X304	

TRANSFORMER (FILAMENT)

ITEM No	RATING PRI	SEC 1	SEC 2	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No	Merit PART No	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V	4 2V @ 15A		54X20		P-2964		P-8467 ①	21F31 ①	F-13X ①	

1 Drill new mounting hole

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T2	Vert. Osc.	54X19	B6702	A 3003	V405	A-8125	28A03	A-97X	
T3	Vert. Output	51X186A	21900 ① ②	A-3038 ① ③	V307 ① ③	VO-100 ① ③	26S73 ① ③	A-118X ① ③	
T4A	Yoke-Horiz.(24.5MH)	SA-3403	DF607	MDF-92	Y90P19/43	DY-18A	Y-16	Y-41 &	
B	(80°)-Vert.(39MH)	④	⑤ ⑥	⑤ ⑥	⑤ ⑥	⑤ ⑥	⑤ ⑥	NW2 ⑥	
M1	Rear Cover & Centering Device	2A425						YC-1	
	Yoke Clamp	30X611						CL-1	
	Rubber Strip	8X247							
T5	Horiz. Output	53X385B		HVO-182		HO-485 *		D-95 *8	
	Adj. Horiz. Output	53X362		HVO-182		HO-283 *		D-95 *8	

① Connect as autoformer.
② Use 9 to 1 turns ratio.
③ Drill new mounting hole(s).
④ Includes resistors (R69, R70).
⑤ Use original rear cover, centering device and horizontal damping network.
⑥ Connect same as original.
1 This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4				8		5
7				3		4
6				2		YCT
5				1		1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	SEC	REPLACEMENT DATA: TRUETONE PART No	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	4700Ω	3-4Ω	51X178	21107	A-2930	AU-601	A-3977	24S51	S-3X	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V C IMP	REPLACEMENT DATA: TRUETONE PART No	QUAM PART No	NOTES
SP1	2½" to 10"	PM	3-4Ω	12A549 ①		① Used in table models
	4"	PM		12A547 ②		② Used in console models
	8'	PM		12A548 ②		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No	NOTES
L1	39MC Trap Coil	9A2369			4302		
L2	1st. Video IF	9A2365		TV-131	4308	VF-4	
L3	2nd. Video IF	9A2363			6123		Includes 47.25MC Trap
L4	3rd. Video IF	9A2414			6235		Includes 41.25MC Trap
L5	4th. Video IF	9A2370			17-4814		Includes M3
L6	Resonant Choke	9A2375					30 Microhenries
L7	Series Peaking Coil	38A40		19-4073 *	TV-186 *	6172 *	VP-2 * 75 Microhenries, wound on 2500Ω resistor
L8	Shunt Peaking Coil	38A39		19-3250	TV-186	6130	VP-6 270 Microhenries
L8	4.5MC Trap	9A2383				4305	
L10	Shunt Peaking Coil	38A42					30 Microhenries, wound on 1800Ω resistor
L11	Shunt Peaking Coil	38A41		19-3100 a	TV-196 a	6113 a	VP-3 a 100 Microhenries, wound on 590Ω resistor
L12	Shunt Peaking Coil	38A43		19-3150 a	TV-196 a	6130 a	180 Microhenries, wound on 3900Ω resistor
L13	1st. Sound IF	9A2393		17-3026	TV-154	1470-A	
L14	2nd. Sound IF	9A2398		17-3495	TV-113	6203	SF-3
L15	3rd. Sound IF	9A2388		17-3496	TV-113	6203	SF-3
L16	Quadrature Coil	9A2397		20-1005	TV-131	1480	
L17	RF Choke	9A2380		19-1001	BC-582	4604	1.5 Microhenries

* Parallel with 3300Ω resistor.
a Parallel with 390Ω resistor.
* Parallel with 3900Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L18	740*		9A2371		TV-165	6311 a		22H-7	Horiz. Freq.
L19	57Ω		9A2372			6318		22H-5 a	Horiz. Waveform

* Tapped at 52Ω. a Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE IO CURRENT 1000 (%)	REPLACEMENT DATA: TRUETONE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
L20	.270A	40Ω	1 Hy.	52X95-8	C5037 ①	C-3296 ①		C-3238 ①	26C44 ①	C-24X

1 Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	REPLACEMENT DATA: TRUETONE PART No	REPLACEMENT DATA
K1	Sync Sep. Coupling	330mmf, 150K		Sprague PRC-5
K2	Vert. Integrator	2000mmf, 5000mmf, 9000mmf, 22K, 82000, 82000	76X7	Aerovox PA-110 Centralab PC-104 Erie 1405-01 Cornell-Dubilier 115TMJ Sprague V-1
K3	Bracket Isolation	470mmf, 3-lmeg	76X11	Centralab RC-471 Sprague R-R171

RECTIFIERS

ITEM No	RATING CURRENT (Measured)	TRUETONE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No	NOTES
M1	270A	66X17 ①	1033A ①	1N1007 ②	RS350SL ①	350A ①	① Selenium type.
						M500 ②	② Germanium type.
M2	270A	66X17 ①	1033A ①	1N1007 ②	RS350SL ①	350A 1	3 Silicon type
						M500 ③	

TRUETONE MODELS 2D1840A, 2D1841A, 2D1842A, 2D1843A, 2D1844A, 2D1845A, 2D2840A, 2D2841A, 2D2842A, 2D2843A

FOLDER 3

PARTS LIST & DESCRIPTION (continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		TRUETONE PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N60 *		1N60	1N60	Video Detector (Pigtail)

* A CK706A may be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Pilot Light		#51
M5	Tuner	25A1160	VHF (Standard Coil part #NAS-4145)
M6	Magnet	2A476	Beam Alignment
M7	Rear Cover & Centering Device	2A435	Includes yoke cover
M8	Circuit Breaker	2A475	

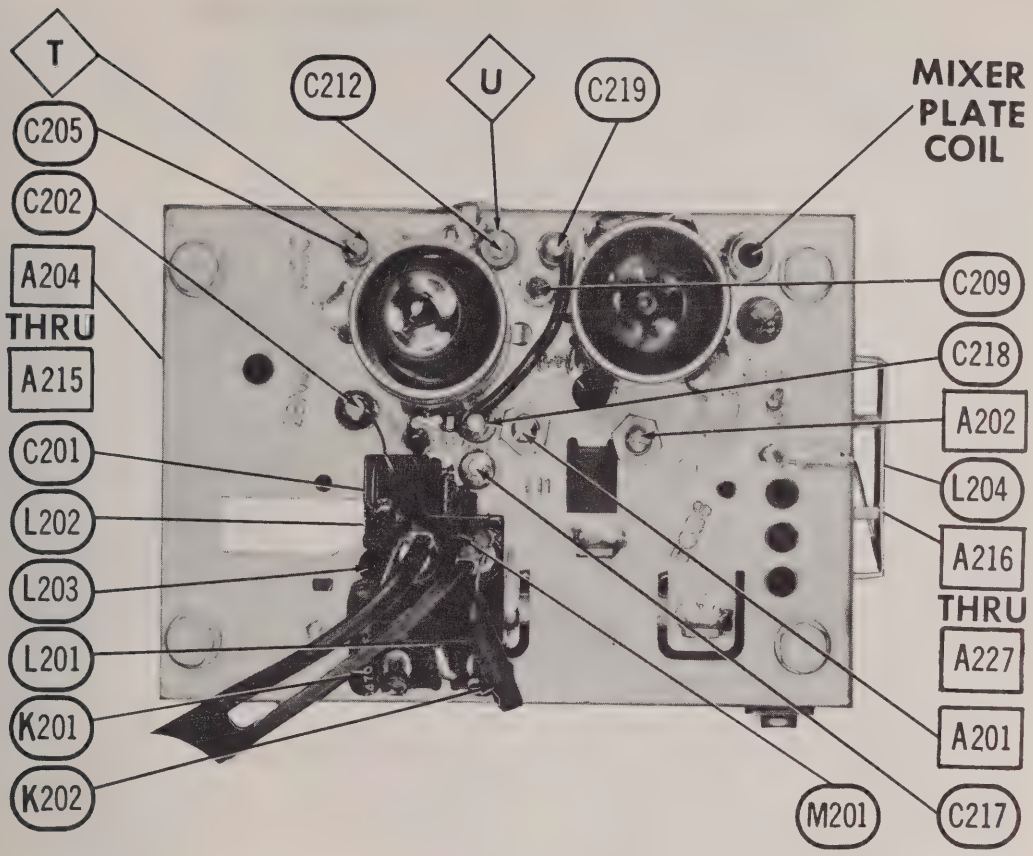
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

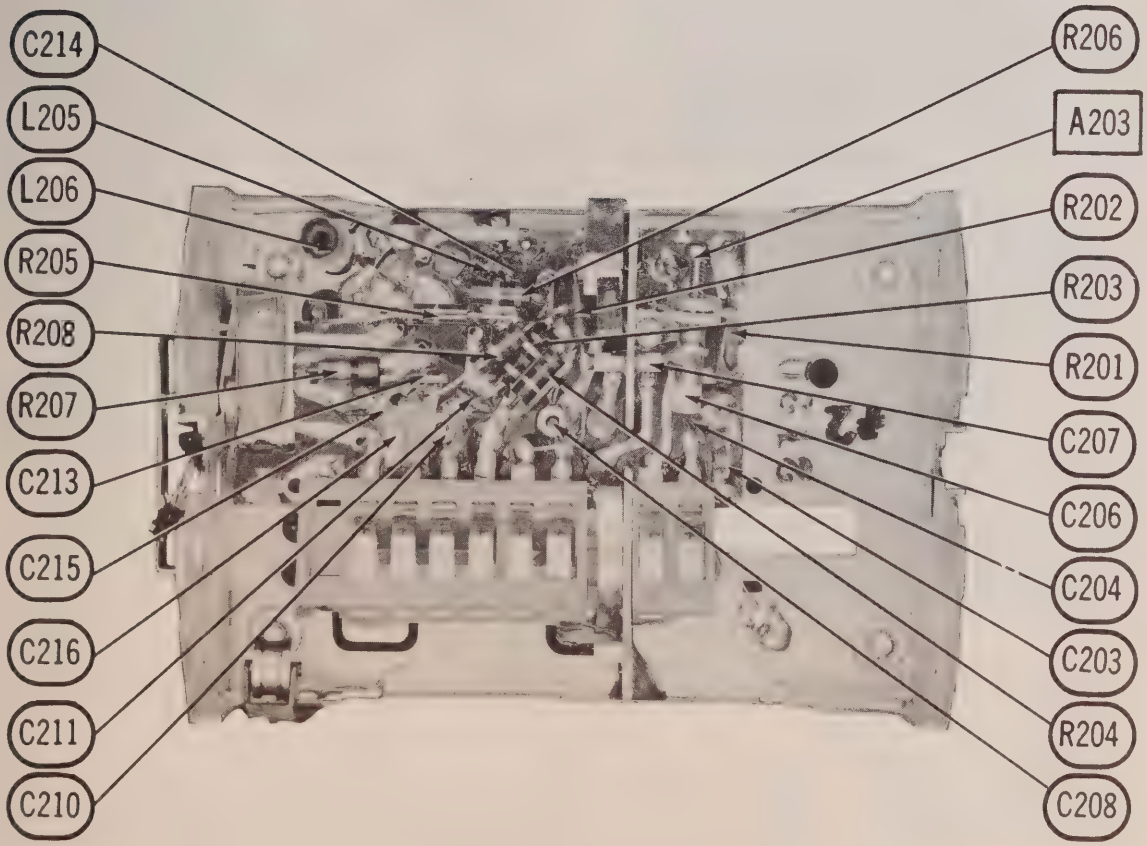
NAME	PART NO.	DESCRIPTION
Safety Glass	17X194-1	
Mask	S-38A382	Table Models
Mask	S-38A375	Console Models
Escutcheon	4X1315-2	
Drive Chain	34X602	
Knob	10A861-1	Secondary Controls
Knob	10A895-1	Fine Tuning
Knob	10A899-1	Channel Selector
Knob	10A896-1	Contrast
Knob	10A897-1	Volume
Knob	10A893-2	UHF Tuning
Knob	10A894-2	UHF Indicator

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor



TUNER TOP VIEW



TUNER-BOTTOM VIEW

TUNER **PARTS LIST AND DESCRIPTIONS**

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		13L8DB121K	NPO-SI 120	D6-121	L10T12	ED-120		5TCC-T12	10%
C202	30		13M320EA300J-05							
C203	28		13R-005							10%
C204	12		13R-003							10%
C205	800		13M320EA801Z-04							
C206	5-10		31T-3149-02							
C207	47		13M130U470J							5%
C208	1-4.5		31B-902-07		829-6		532-B			
C209	800		13M320EA801Z-04							
C210	1-4.5		31B-902-07		829-6		532-B			
C211	47		13R-008							10%
C212	30		13M320EA300M-06							
C213	1000		13R-024							
C214	6.8		13R-014							N330 .5%
C215	3		13R-011							.3%
C216	2		13R-009							N750 .1%
C217	800		13M320EA801Z-04							
C218	800		13M320EA801Z-04							
C219	800		13M320EA801Z-04							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	3900Ω			
R204	220K			

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R205	1000Ω			
R206	10K			
R207	10K			
R208	6800Ω			

COILS (RF-IF)

ITEM No.	USE	TRUETONE PART No.	NOTES
L201	Ant. Trans.	31T-210-01	Includes Assy.
L202	IF Trap Coil	34A-748	
L203	IF Trap	31TA-2109	
L204A	Ant., RF, Mixer Grid, Osc. Coils	31M-300-2N4A	Channel 2
B	"	31M-300-3N4A	Channel 3
C	"	31M-300-4N4A	Channel 4
D	"	31M-300-5N4A	Channel 5
E	"	31M-300-6N4A	Channel 6
F	"	31M-300-7N4A	Channel 7

ITEM No.	USE	TRUETONE PART No.	NOTES
L204G	Ant. RF, Mixer Grid, Osc. Coils	31M-300-8N4A	Channel 8
H	"	31M-300-9N4A	Channel 9
I	"	31M-300-10N4A	Channel 10
J	"	31M-300-11N4A	Channel 11
K	"	31M-300-12N4A	Channel 12
L	"	31M-300-13N4A	Channel 13
L205	RF Choke	25A-176-01	
L206	Mixer Plate Coil	31U-530-01	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg	13P-198 *	Centralab Sprague	RC-471 R-9177
K202	Antenna Isolation	470mmf, .3-1meg	13P-198 *	Centralab Sprague	RC-471 R-9177

* Alternate part #76X11.

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M201	Ant. Input Assy. Drum Assy. Osc. Slug	31T-2107-07 31TA-2073-171-08 15A266	Includes K201. K202, L201 Less strips 12 Required.

TP1 185V HORIZ WAVEFORM

CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	500K	47Ω	12Ω	13Ω	† 2100Ω	† 2100Ω	0Ω		
V2	3BZ6	490K	47Ω	13Ω	14Ω	† 2100Ω	† 2100Ω	0Ω		
V3	3CB6	.1Ω	180Ω	14Ω	15Ω	† 1700Ω	† 1700Ω	0Ω		
V4	5U8	† 7300Ω	2Ω	† 34K	15Ω	16Ω	† 34K	560Ω	1.5Ω	3900Ω
V5	12BY7A	• 380Ω	1meg	0Ω	19Ω	19Ω	18Ω	† 3600Ω	† 1200Ω	0Ω
V6	3AU6	† 30K	† 1200Ω	10.5Ω	11Ω	90K	† 0Ω	† 1200Ω		
V7	5U8	† 12K	100K	† 150K	16Ω	17Ω	† 83K	0Ω	0Ω	47K
V8	3BN6	• 220Ω	3.2Ω	9Ω	10.5Ω	† 5900Ω	5.7Ω	† 330K		
V9	5AQ5	Ω	270Ω	18Ω	17Ω	† 970Ω	† 470Ω	0Ω		
V10	3BY6	• 300K	0Ω	12Ω	11Ω	† 820K	† 28K	2.2meg		
V11	10DE7	† 390Ω	2.2meg	2.2meg	20.5Ω	19Ω	• ‡ 1.4meg	• 770K	220Ω	• 1400Ω
V12	6CG7	† 56K	410K	0Ω	9Ω	8Ω	• † 27K	1.5meg	410K	0Ω
V13	12DQ6A	TP	4.5Ω	NC	† 10K	470K	TP	7Ω	100Ω	TOP CAP ‡ 10Ω
V14	12AX4GTA	TP	NC	¶	NC	† .1Ω	TP	4.5Ω	2Ω	
V15	1B3GT	PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE				TOP CAP ‡ 300Ω
V16	21CBP4A	7Ω	1meg	PIN 6 † 100K	PIN 10 ‡ 10meg	PIN 11 • 240K	PIN 12 8Ω			
V201	2BN4	0Ω	500K	2Ω	1.5Ω	† 2200Ω	0Ω	500K		
V202	5CG8	10K	† 8000Ω	0Ω	0Ω	1.5Ω	† 2200Ω	† 11K	0Ω	220K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

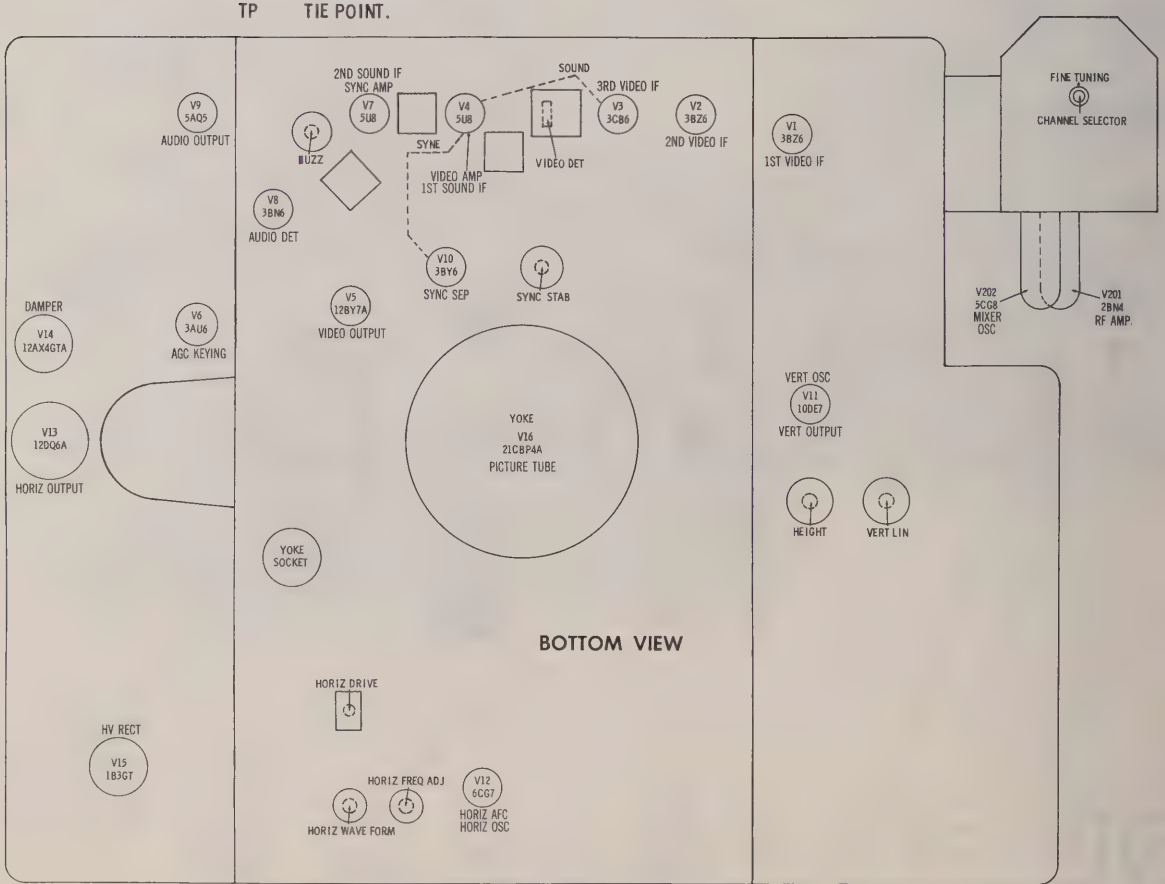
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 250V SOURCE.

‡ MEASURED FROM PIN 3 OF V14.

NC NO CONNECTION.

TP TIE POINT.



TUBE PLACEMENT CHART

The PHOTOFACT Servicer

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Indianapolis 5, Indiana

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Company	Code No.
ACF Electronics, Division of ACF Industries, Inc., Alexandria, Va.	900
*Acme Coil & Transformer Corp., Chicago 14, Ill.	928
*Acme Electric Corporation, Cuba, N. Y.	413
Acro Products Company, Philadelphia 28, Penna.	878
Adler Electronics, Inc., New Rochelle, N. Y.	813
*Admiral Corporation, Chicago 47, Ill.	101
*Advance Industries, Inc., Cambridge 39, Mass.	1043
*Aerolite Electronics Corp., Union City, N. J.	910
Aerovox Corporation, New Bedford, Mass.	102
*Ajax Condenser Co., Inc., Chicago 14, Ill.	705
Aladdin Electronics, a Division of Aladdin Industries, Inc., Nashville 10, Tenn.	689
*A.L.A. Industries, Inc., Harrison, N. Y.	1031
Alcon Metal Products, Inc., Chicago 47, Ill.	573
Allen-Bradley Company, Milwaukee 4, Wis.	106
The Alliance Manufacturing Co., Inc., Alliance, Ohio	107
All Star Products, Inc., Defiance, Ohio	110
Alpha Metals, Inc., Jersey City 4, N. J.	733
Altec Lansing Corporation, Anaheim, Calif.	391
American Condenser Corporation, Chicago 40, Ill.	109
American Electronics Company, New York 59, N. Y.	978
*American Lava Corporation, Chattanooga 5, Tenn.	681
*American Radionic Co., Inc., Danbury, Conn.	648
American Television & Radio Co., St. Paul 1, Minn.	551
*American Transformer Corp., Chicago 7, Ill.	892
Amperex Electronic Corporation, Hicksville, L. I., N. Y.	111
Amphenol Electronics Corporation, Chicago 50, Ill.	554
*The Amplifone Corporation, Chicago 40, Ill.	1002
*Anaconda Wire & Cable Company, Hastings-on-Hudson 6, N. Y.	547
*Andrea Radio Corporation, Long Island City 1, N. Y.	113
Andrew Corporation, Chicago 19, Ill.	402
Andrews Tower, Inc., Fort Worth 11, Tex.	852
The Antenna Specialists Company, Cleveland 6, Ohio	920
Anton Electronics Laboratories, Inc., Sub. of U. S. Hoffman Machinery Corp., Brooklyn 37, N. Y.	961
*Apex Coil & Transformer Corp., Chicago 8, Ill.	949
A. R. F. Products, Inc., River Forest, Ill.	115
Armel Electronics, Inc., Brooklyn 32, N. Y.	893
The Arnold Engineering Company, Sub. of Allegheny Ludlum Steel Corp., Marengo, Ill.	116
Arvin Industries, Inc., Columbus, Ind.	248
*Associated Transformer Corp., Chicago 47, Ill.	1035
Atlantic Wire & Cable Corp., College Point 56, N. Y.	792
*The Astatic Corporation, Conneaut, Ohio	345
*Audio Devices, Inc., Rectifier Division, Santa Ana, Calif.	1051
Automatic Manufacturing Division, General Instrument Corp., Newark 4, N. J.	119
Automatic Radio Mfg. Co., Inc., Boston 15, Mass.	120
Barker & Williamson, Inc., Bristol, Penna.	461
Barnes Metal Products Company, Chicago 23, Ill.	588
*Bartlett Manufacturing Company, Glenview, Ill.	985
Basler Electric Company Highland, Ill.	695
The Bead Chain Manufacturing Co., Bridgeport 5, Conn.	122
Belden Manufacturing Company, Chicago 44, Ill.	579
Bendix Radio, Division of Bendix Aviation Corp., Baltimore 4, Md.	125
Benson-Lehner Corporation, Los Angeles 64, Calif.	,991
*Best Manufacturing Co., Inc., Irvington 11, N. J.	371
*Better Coil & Transformer Corp., Goodland, Ind.	831
*Blackburn Electronic Corporation, Wyoming, Pa.	912
Bliley Electric Company, Erie, Pa.	128
David Bogen Co. Division, Unitronics Corp., Paramus, N. J.	589
Bomac Laboratories Inc., Beverly, Mass.	940
*Bradford Components, Inc., Salamanca, N. Y.	1044
*Bradley Laboratories, Inc., New Haven 11, Conn.	812
British Industries Corporation, Port Washington, L. I., N. Y.	409
Brubaker Electronics, Inc., Culver City, Calif.	817
*Burnell & Co., Inc., Pelham Manor, N. Y.	1014
Caledonia Electronics & Transformer Corp., Caledonia, N. Y.	503
*California Magnetic Control Corp., North Hollywood, Calif.	799
Cal-Ros Industries, Inc., Chicago 22, Ill.	1039
Cal-Tronics Corporation, Los Angeles 45, Calif.	862
Calvideo Tube Corporation, Los Angeles 45, Calif.	886
Campbell Industries, Inc., Dover, N. H.	1017
C. F. Cannon Co., Springwater, N. Y.	133
*Carbonneau Industries, Grand Rapids 2, Mich.	719
*Cargo Packers, Inc., Glendale 27, N. Y.	901
*Carol Electronics Corporation, Martinsburg, W. Va.	837
*Carr Fastener Company, Division of United-Carr Fastener Corp., Cambridge 42, Mass.	370
Carter Parts Company, Chicago 10, Ill.	610
C-B-C Electronics Co., Inc., Philadelphia 33, Pa.	867
CBS-Hytron, Division of Columbia Broadcasting System Inc., Danvers, Mass.	210
Celco (Constantine Engineering Labs. Co.), Mahwah, N. J.	692
Centralab, Div. of Globe-Union Inc., Milwaukee 1, Wis.	134
*Central Coil Company, Indianapolis 22, Ind.	637
Central Electronic Manufacturers, Inc., Denville, N. J.	841
*Chester Cable Corp., Chester, N. Y.	909
Chicago Condenser Corporation, Chicago 47, Ill.	135
*Chicago Electronic Engineering Co., Chicago 47, Ill.	166
*Chicago Standard Transformer Division, Essex Wire Corp., Chicago 18, Ill.	138

Company	Code No.
Chicago Telephone Supply Corp., Elkhart, Ind.	137
Chromatic Television Laboratories, Inc., New York 36, N. Y.	850
Cinch Manufacturing Corporation, Chicago 24, Ill.	139
Clarostat Mfg. Co., Inc., Dover, N. H.	140
*Cleveland Electronics, Inc., Cleveland 3, Ohio	433
Clevite Transistor Products, Division of Clevite Corporation, Waltham 54, Mass.	856
*Clippard Instrument Laboratory, Inc., Cincinnati 24, Ohio	530
*Coilcraft, Incorporated, Cary, Ill.	906
*Coil Engineering & Mfg. Co., Inc., Roanoke, Ind.	141
Collins Radio Company, Cedar Rapids, Ia.	439
*Columbia Technical Corporation, Woodside 77, N. Y.	1048
*Columbus Process Co., Inc., Columbus, Ind.	450
Communication Accessories Company, Lee's Summit, Mo.	1019
Communication Measurements Laboratory, Inc., Plainfield, N. J.	427
Connector Corporation, Chicago 30, Ill.	888
Conrac Incorporated, Glendora, Calif.	680
*Consolidated Radio Products Co., Chicago 10, Ill.	145
Consolidated Wire & Associated Companies, Chicago 16, Ill.	607
Continental Carbon Div. of Wirt Company, Cleveland 11, Ohio	146
Continental Electric Company, Chicago 2, Ill.	147
Continental Electronics Corp., Philadelphia 32, Penna.	811
*Controls Company of America, Schiller Park, Ill.	711
Convair, Pomona Division, General Dynamics Corp., Pomona, Calif.	898
Corning Glass Works, Corning, N. Y.	148
Cornish Wire Company, Inc., New York 7, N. Y.	149
Cosmic Radio Corporation, New York 59, N. Y.	704
*Crescent Industries, Inc., Chicago 31, Ill.	150
Croname, Incorporated, Chicago 13, Ill.	151
*C.R.T. Electronics Corp., Mount Vernon, N. Y.	884
Crucible Steel Company of America, New York 17, N. Y.	525
Cubic Corporation, San Diego 11, Calif.	870
Dale Products, Inc., Columbus, Nebr.	816
J. W. Davis & Company, Dallas 35, Texas	563
*Davis Electric Company, Cape Girardeau, Mo.	628
*Dearborn Glass Company, Bedford Park, Ill.	385
DeJur-Amsco Corporation, Long Island City 1, N. Y.	780
Delco Radio Division, General Motors Corporation, Kokomo, Ind.	466
*Tobe Deutschmann Corporation, Norwood, Mass.	154
DeWald Radio Mfg. Corp., Long Island City 1, N. Y.	155
*Dinion Coil Co., Inc., Caledonia, N. Y.	895
D & M Products, Detroit 35, Mich.	903
R. L. Drake Company, Miamisburg, Ohio	851
Drake Manufacturing Company, Chicago 22, Ill.	586
Wilbur B. Driver Company, Newark 4, N. J.	156
DuKane Corporation, St. Charles, Ill.	252
Allen B. DuMont Laboratories, Inc., Clifton, N. J.	158
*Dunleavey Electronics Corporation, Stoughton, Mass.	1046
*DX Radio Products Company, Inc., Chicago 47, Ill.	159
Eberline Instrument Division, Reynolds Electrical and Engineering Co., Santa Fe, New Mexico	994
*Hugh H. Eby Company, Philadelphia 44, Penna.	160
Eckstein Radio & Television Co., Minneapolis 6, Minn.	161
Eitel-McCullough, Inc., San Bruno, Calif.	162
*Elco Corporation, Philadelphia 24, Penna.	599
Eldico Electronics, Division of Radio Engineering Laboratories, Inc., Long Island City, N. Y.	783
*Electrical Utilities Company, La Salle, Ill.	569
*Electrical Windings, Inc., Chicago 39, Ill.	682
*Electro Engineering Works, San Leandro, Calif.	1033
The Electro Motive Mfg. Co., Inc., Willimantic, Conn.	164
*Electronic Components Corporation, Chicago 8, Ill.	515
Electronic Devices, Inc., Brooklyn 15, N. Y.	752
Electronic Engineering Company of California, Santa Ana, Calif.	941
*Electronic Enterprises, Inc., Newark 4, N. J.	545
*Electronic Specialty Co., Los Angeles 39, Calif.	169
Electronic Tube Corporation, Philadelphia 18, Penna.	170
*Electrons, Incorporated, Newark 3, N. J.	935
Electro-Voice, Inc., Buchanan, Mich.	649
*Electro-Winders Co. Inc., Covina, Calif.	984
Elgin Metalformers Corporation, Elgin, Ill.	902
*El-Rad Manufacturing Co., Chicago 18, Ill.	632
*Emerson Radio & Phonograph Corp., Jersey City 2, N. J.	171
Ensign Coil Company, Chicago 23, Ill.	172
Erca Tool Die & Stamping Co., Brooklyn 22, N. Y.	762
Erie Resistor Corporation, Erie, Pa.	173
*Esquire Radio Corporation, Brooklyn 19, N. Y.	742
*Essex Electronics, Berkeley Heights, N. J.	425
*Essex Wire Corporation, Fort Wayne 6, Ind.	175
Farnsworth Electronics Company, Fort Wayne 1, Ind.	938
John E. Fast & Company, Chicago 18, Ill.	178
*Fastex Division, Illinois Tool Works, Des Plaines, Ill.	1
Federal Telephone and Radio Company, Clifton, N. J.	179
Federated Metals Division, American Smelting and Refining Co., New York 5, N. Y.	942

Company	Code No.
Ferranti Electric, Inc., New York 20, N. Y.	1040
*Filtors, Inc., Port Washington, L. I., N. Y.	977
*Fischer Electric Co., Inc., De Leon Springs, Fla.	1006
*Florida-Merit Inc., Hollywood, Fla.	987
Forbes & Wagner, Inc., Silver Creek, N. Y.	701
Foto-Video Laboratories, Inc., Cedar Grove, N. J.	963
*The Forest Electric Company, Forest Park, Ill.	773
*Foster Transformer Company, Cincinnati 23, Ohio	394
Fretco Incorporated, Pittsburgh 13, Penna.	734
*L. H. Frost & Co., Inc., Grand Rapids 8, Mich.	746
*Fugle-Miller Laboratories, Clark, N. J.	1003
*F. & V. Coil Winding Corporation, Newark 5, N. J.	572
*Gahagan, Inc., Esmond 17, R. I.	1057
*Gates Radio Company, Quincy, Ill.	187
*Gavitt Wire & Cable Co., Division of American Hard Rubber Co., Brookfield, Mass.	360
*Gefco Manufacturing Company, Grayslake, Ill.	1056
*General Cable Corporation, Perth Amboy, N. J.	571
General Cement Mfg. Co., Div. Textron, Inc., Rockford, Ill.	396
General Electric Company, Syracuse 1, N. Y.	188
*General Electronics, Division of Arcturus Electronics Inc., Paterson 3, N. J.	189
The General Industries Company, Elyria, Ohio	190
General Instrument Corporation, Newark 4, N. J.	191
General Magnetic Corporation, Detroit 34, Mich.	193
General Mills, Inc., Mechanical Division, Minneapolis 13, Minn.	927
*General Precision Laboratory Inc., Pleasantville, N. J.	582
General Products Corporation, Union Springs, N. Y.	913
General Radio Company, Cambridge 39, Mass.	194
General Railway Signal Company, Rochester 2, N. Y.	644
*General Transformer Company, Homewood, Ill.	412
General Transistor Corporation, Jamaica 35, N. Y.	990
G. M. Giannini & Co., Inc., Pasadena 1, Calif.	943
Glaser-Steers Corporation, Belleville 9, N. J.	670
*Glass Products Company, Santa Barbara, Calif.	475
The Fred Goat Co., Inc., Brooklyn 17, N. Y.	197
Good-All Electric Mfg Co., Ogalalla, Nebr.	446
*Gonset Division, L. A. Young Spring & Wire Corp., Burbank, Calif.	983
*Gordos Corporation, Bloomfield, N. J.	806
*Gramer-Halldorson Transformer Corp., Chicago 39, Ill.	596
*Grand Coil Winders, Grand Haven, Mich.	996
*Grand Transformers, Inc., Grand Haven, Mich.	757
Grayhill, La Grange, Ill.	992
*Gray & Kuhn Inc., Roslyn Heights, N. Y.	1028
Gremar Manufacturing Co., Inc., Wakefield, Mass.	1045
Grigsby-Allison Company, Inc., Arlington Heights, Ill.	467
The Gudeman Company, Chicago 10, Ill.	438
*Guthman Division, Essex Wire Corp., Chicago 7, Ill.	198
The Hallicrafters Co., Chicago 24, Ill.	199
*Hamilton-Hall Mfg. Company, Milwaukee 2, Wis.	936
Hammarlund Mfg. Co., Inc., New York 1, N. Y.	201
Hardwick, Hindle, Inc., Newark 5, N. J.	411
Harman-Kardon, Inc., Westbury, Long Island, N. Y.	794
Hawley Products Company, St. Charles, Ill.	204
Haydu Electronic Products, Inc., Plainfield, N. J.	205
Hazeltine Corporation, Little Neck 62, N. Y.	376
*Henald Manufacturing Co. Inc., Piper City, Ill.	808
*Heppner Manufacturing Company, Round Lake, Ill.	575
The Hickok Electrical Instrument Co., Cleveland 8, O.	508
*Hillburn Electronic Products Co., Brooklyn 22, N. Y.	687
*Hinners-Galanek Radio Corp., Cavalier Radio & Television Div., Rego Park 74, N. Y.	786
Hi-Q Division Aerovox Corporation, Olean, N. Y.	163
Hoffman Electronics Corporation, Los Angeles 7, Calif.	207
*Holiday Transformer Corporation, Chicago 14, Ill.	1038
*Holyoke Wire and Cable Corporation, Holyoke, Mass.	372
*Hopkins Engineering Company, San Fernando, Calif.	791
Huggins Laboratories, Inc., Menlo Park, Calif.	964
Hughes Aircraft Company, Culver City, Calif.	744
*Hupp Electronics Company, Carlisle, Penna.	501
Hycon Electronics, Inc., Pasadena, Calif.	1007
Hy-Gain Antenna Products Company, Lincoln 4, Nebr.	894
*Illinois Condenser Company, Chicago 22, Ill.	616
The Indiana Steel Products Company, Valparaiso, Ind.	211
Inductor Engineering, Inc., Lewes, Del.	915
Industrial Development Engineering Associates, Inc. Indianapolis 26, Ind.	638
*Industrial Hardware Manufacturing Co., Inc., New York 12, N. Y.	866
*Industrial Television, Inc., Clifton, N. J.	541
*Industrial Tubes, Inc., Geneva, Ill.	972
Industro Transistor Corporation, Long Island City 6, N. Y.	1053
International Electronic Industries, Inc., Nashville 1, Tenn.	911
International Electronics Corp., New York 12, N. Y.	1022
International Electronics Research Corp., Burbank, Calif.	1023
International Instruments, Inc., New Haven 15, Conn.	855
International Rectifier Corporation, El Segundo, Calif.	845
International Resistance Company, Philadelphia 8, Pa.	214

Company	Code No.
International Telemeter Corp., Los Angeles 25, Calif.	887
*Ion Capacitor Corp., Columbia City, Ind.	1013
Jackson Electrical Instrument Co., Dayton 2, Ohio	216
*James Vibrapowr Company, Chicago 18, Ill.	863
J-B-T Instruments, Inc., New Haven 8, Conn.	442
Jeffers Electronics Division, Speer Carbon Company, Dubois, Penna.	724
*Jefferson Electric Company, Bellwood, Ill.	218
Jensen Manufacturing Company, Div. of The Muter Company, Chicago 38, Ill.	220
Jerrold Electronics Corporation, Philadelphia 3, Pa.	923
Jersey Specialty Co., Inc., Mountainview, N. J.	730
*Jet Electronics Corporation, Glendale 4, Calif.	1004
JFD Manufacturing Co., Inc., Brooklyn 4, N. Y.	221
*J & G Machine Company, Worcester 8, Mass.	945
E. F. Johnson Company, Waseca, Minn.	222
Johnson Electronics Inc., Orlando, Fla.	784
Kay Electric Company, Pine Brook, N. J.	820
*Kemtron Electron Products, Inc., Newburyport, Mass.	1016
Kentron Hawaii Ltd., Honolulu 14, Hawaii	1054
Kerrigan Lewis Manufacturing Co., Chicago 51, Ill.	223
Kester Solder Company, Chicago 39, Ill.	224
Keystone Electronics Company, Newark 4, N. J.	699
Kimble Glass Company, Sub. of Owens-Illinois Glass Co., Toledo 1, Ohio	647
King Laboratories, Inc., Syracuse 3, N. Y.	225
Kin Tel, Division of Cohu Electronics, Inc., San Diego 11, Calif.	925
Kip Electronics Corporation, Stamford, Conn.	593
*Kline Iron and Steel Company, Columbia, S. C.	869
*The James Knights Company, Sandwich, Ill.	504
*Kobzy Tool Company, Chicago 22, Ill.	594
Kost Products Company, Inc., Chicago 39, Ill.	951
Leach Corporation, Compton, Calif.	1024
*Lectrohm, Inc., Chicago 30, Ill.	974
Lenz Electric Manufacturing Co., Chicago 47, Ill.	228
*Leonard Electric Products Co., Inc., Brooklyn 32, N. Y.	570
*Lewis and Kaufman, Ltd., Los Gatos, Calif.	738
Littlefuse, Incorporated, Des Plaines, Ill.	230
Litton Industries, Inc., Beverly Hills, Calif.	879
Lowell Manufacturing Company, St. Louis 17, Mo.	657
*Lytle Engineering & Mfg. Co., Chicago 1, Ill.	671
Machlett Laboratories, Incorporated, Springdale, Conn.	231
The Magnavox Company, Fort Wayne 4, Ind.	232
*Magnetic Coil Manufacturing Company, Chicago 22, Ill.	933
*Magnetic Windings Division (Essex Wire Corporation), Easton, Pa.	352
P. R. Mallory & Co., Inc., Indianapolis 6, Ind.	235
*Marvel Electric Corporation, Chicago 22, Ill.	989
*Mayfair Molded Products Corporation, Schiller Park, Ill.	1041
McCoy Electronics Co., Mt. Holly Springs, Penna.	832
McGregor Electronic Industries, Inc., McGregor, Ia.	789
McIntosh Laboratory, Inc., Binghamton, N. Y.	793
Measurements Corporation, Boonton, N. J.	236
Mechanical Steel Tubing Corporation, Bronx 59, N. Y.	546
*Mel-Rain Corporation, Indianapolis 3, Ind.	834
Merit Coil & Transformer Corp., Chicago 40, Ill.	239
Methode Manufacturing Corp., Chicago 47, Ill.	720
Micamold Electronics Manufacturing Corp., Sub. General Instrument Corp., Brooklyn 37, N. Y.	240
Microtran Company, Inc., Valley Stream, L. I., N. Y.	768
Midland Manufacturing Co., Inc., Kansas City 15, Kan.	828
*Mid-West Coil & Transformer Co., Chicago 14, Ill.	549
Midwest Speaker Company, McGregor, Iowa	993
James Millen Manufacturing Co., Inc., Malden 48, Mass.	242
Milwaukee Resistor Company, Milwaukee 4, Wis.	722
Miniature Electronics Components, Nashville 4, Tenn.	885
*Model Engineering & Manufacturing, Inc., Chicago 18, Ill.	976
Moloney Electric Company, St. Louis 20, Mo.	965
Mosley Electronics, Incorporated, St. Louis 14, Mo.	750
Motorola Inc., Chicago 51, Ill.	185
Mullenbach Division of Electric Machinery Mfg. Co., Los Angeles 58, Calif.	966
Multi-Tron Laboratory, Inc., Chicago 44, Ill.	693
The Muter Company, Chicago 5, Ill.	244
Mycalex Corporation of America, Clifton, N. J.	642
*National Aeronautical Corporation, Fort Washington, Pa.	643
*National Company, Inc., Malden 48, Mass.	245
*National Electronics, Inc., Geneva, Ill.	749
National Fabricated Products, Div. of Hoffman Electronics Corp., Chicago 47, Ill.	246
National Moldite Company, Newark 5, N. J.	367
*National Tel-Tronics Corp., Yonkers, N. Y.	999
*National Video Corporation, Chicago 32, Ill.	836
*Newcomb Electronics Corporation, Hollywood 38, Calif.	437
New York Transformer Co., Inc., Alpha, N. J.	366
North American Aviation, Inc., Downey, Calif	967
North American Philips Company, Inc., New York 17, N. Y.	423
Northwest Plastics, Inc., St. Paul 1, Minn.	723
*NYT Electronics, Inc., Burbank, Calif.	1030
Oak Electronics Company, Buffalo 3, N. Y.	739
Oak Mfg. Co., Chicago 10, Ill.	249
*Oaktron Electric Company, Tinley Park, Ill.	934
*Oaktron Industries Inc., Monroe, Wis.	918
*Ogden Coil & Transformer Co., Chicago 12, Ill.	776
The Ohio Carbon Company, Cleveland 11, Ohio	250
Ohmite Manufacturing Company, Skokie, Ill.	251
Olympic Products Co., Inc., Alpha 1, N. J.	740
Olympic Radio & Television Div. Unitronics Corp., Long Island City 1, N. Y.	200
Onondaga Pottery Company, Electronics Division, Syracuse 1, N. Y.	848
*Ontario Industries, Inc., Hornell, N. Y.	960
Orradio Industries, Inc., Opelika, Ala.	840
Otis Radio & Electric Corp., Hawarden, Iowa	552
Oxford Electric Corporation, Chicago 15, Ill.	465
Pacific Semiconductors, Inc., Culver City, Calif.	947
Packard-Bell Electronics Corp., Los Angeles 64, Calif.	254
Pan-Electronics Corporation, Griffin, Ga.	904
Parker Metal Goods Company, Worcester 8, Mass.	929
*Park Products Company, Cleveland 3, Ohio	1011
*Paul & Beekman, Inc., Philadelphia 40, Pa.	736
*PCA Electronics Inc., Sepulveda, Calif.	973
*Peirce Wire Recorder Corporation, Chicago 31, Ill.	279
Penn Television Products Company, Philadelphia 34, Pa.	726
Penn Tran Corporation, Bellefonte, Pa.	665
Penta Laboratories, Inc., Santa Barbara, Calif.	771
*Phalo Plastics Corporation, Worcester 8, Mass.	697
Philco Corporation, Philadelphia 34, Pa.	260
*Philmore Manufacturing Co., Inc., New York 3, N. Y.	262
*Pickering and Company, Inc., Oceanside, N. Y.	631
Pilot Radio Corporation, Long Island City 1, N. Y.	264
Pioneer Electronics Corporation, Los Angeles 64, Calif.	706
*Planet Manufacturing Corporation, Bloomfield, N. J.	761
*Polan Industries, Inc., Huntington 19, W. Va.	621
Pomona Electronics Co., Inc., Pomona, Calif.	1050
*Power Conversions Corporation, Chicago 12, Ill.	1047
Precision Apparatus Company, Inc., Glendale 27, Long Island, N. Y.	505
*Precision Electronic Coil Manufacturing Co., Santa Monica, Calif.	982
Precision Electronics Inc., Franklin Park, Ill.	871
*R. Prescott & Son, Inc., Keeseville, N. Y.	356
Presto Recording Company, Sub. Unitronics Corporation, Paramus, N. J.	1027
Prodelin, Inc., Kearny, N. J.	703
*Pyramid Electric Company, North Bergen, N. J.	472
*Q. L. C. Corporation, Summit, N. J.	464
*Quality Transformer & Coil Co., Inc., Chicago 14, Ill.	1005
Quam-Nichols Company, Chicago 37, Ill.	270
*Quik-Chek Corporation, Philadelphia 41, Pa.	743
Quincy Speaker Manufacturing Corp., Quincy, Ill.	767
Rada Products Co., Chicago 12, Illinois	482
Radio Condenser Company, Camden 3, N. J.	273
Radio Corporation of America, Camden, N. J.	274
Radio Development & Research Corp., Paterson 3, N. J.	924
Radio Engineering Laboratories, Inc., Long Island City 1, N. Y.	276
*Radio Industries, Inc., Chicago 40, Ill.	540
Radio Materials Corporation, Chicago 18, Ill.	732
*The Radion Corporation, Chicago 14, Ill.	700
*Radio Receptor Company, Inc., New York 11, N. Y.	380
Radio Specialty Manufacturing Co., Portland 14, Oregon	587
*Radio Television Products Corp., Grass Lake, Mich.	489
The Radix Wire Company, Euclid 32, Ohio	948
RAM Electronics, Inc., Irvington-on-Hudson, N. Y.	617
Rapid Die and Molding Co., Schiller Park, Ill.	968
*Ratel, Inc., Goleta, Calif.	835
Ratigan Electronics Inc., Los Angeles 11, Calif.	979
Raytheon Manufacturing Company, Waltham 54, Mass.	280
Rea Magnet Wire Company, Inc., Fort Wayne 4, Ind.	281
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.	1012
*Red Lion Cabinet Company, Red Lion, Pa.	384
Remler Company, San Francisco 10, Calif.	284
Resitron Laboratories, Inc., Santa Monica, Calif.	917
Rheem Electronics Division, Rivera, Calif.	1042
Rhein Sound Systems, Inc., New Haven 5, Conn.	952
Robertshaw-Fulton Controls Co., Aeronautical Division, Anaheim, Calif.	1008
*Rogers Corporation, Rogers, Conn.	1055
*Rogers Electronic Corp., New York 12, N. Y.	677
The Rola Company, Inc., Div. of The Muter Company, Cleveland 14, Ohio	285
*Rollan Electric Co., Chicago 20, Ill.	721
The Ross Manufacturing Company, Chicago 45, Ill.	286
*Rowe Industries, Toledo 9, Ohio	580
*Russell Speaker Company, Chicago 21, Ill.	748
S & A Electronics, Toledo 5, Ohio	872
*Sampson Electric Products Co., Clinton, N. C.	518
San Fernando Electric Mfg. Co., San Fernando, Calif.	815
Sangamo Electric Company, Electronic Components Division, Springfield, Ill.	658

Company	Code No.
*Santay Corporation, Chicago 24, Ill.	368
Sarkes Tarzian, Inc., Bloomington, Ind.	684
Schneider & Marquard, Inc., Brooklyn 17, N. Y.	520
*Schulmerich Electronics, Inc., Sellersville, Penna.	428
Scientific Radio Products, Inc., Omaha 8, Nebr.	953
Sentinel Radio Company, Sub. Magnavox Company, Evanston, Ill.	291
Sheffco Mfg. Corp., Fairview, N. J.	698
*Sherold Crystals Inc., Kansas City 8, Mo.	975
*Sherron Electronics Company, Brooklyn 6, N. Y.	293
Shure Brothers, Inc., Evanston, Ill.	590
Shurite Meters (J-B-T Instruments, Inc.), New Haven 8, Conn.	484
F. W. Sickles Division, General Instrument Corp., Chicopee, Mass.	294
Simpson Electric Company, Chicago 44, Ill.	614
*Mark Simpson Manufacturing Co., Inc., Long Island City 3, N. Y.	295
Skiatron Electronics & Television Corp., New York 14, N. Y.	931
*Solar Manufacturing Corporation, Los Angeles 58, Calif.	296
*Sonotone Corporation, Elmsford, N. Y.	787
Soundolier, Inc., St. Louis 22, Mo.	1026
Southern Electronics Company, Greeneville, Tenn.	891
*Sparton Electronics Division, The Sparks-Withington Company, Jackson, Mich.	299
Speer Resistor Division, Speer Carbon Company, St. Marys, Penna.	300
Spencer Kennedy Laboratories, Inc., Boston 35, Mass.	782
Sprague Electric Company, North Adams, Mass.	303
Sprague of Wisconsin, Inc., Grafton, Wis.	457
Stackpole Carbon Company, St. Marys 3, Pa.	304
*Standard Coil Products Co. Inc., Melrose Park, Ill.	305
*Standard Condenser Corp., Chicago 13, Ill.	710
Standard Crystal Company, Kansas City 8, Mo.	995
*Standard Electrical Products Co., Dayton 3, Ohio	668
Standard Electronics, Division of Radio Engineering Labs., Inc., Long Island City 1, N. Y.	694
Standard Television Tube Corp., New Orleans 12, La.	922
*Standard Winding Company, Newburgh, N. Y.	550
*Stanwyck Winding Company, Newburgh, N. Y.	574
The Staver Company Incorporated, Bay Shore, L. I.	604
Stewart-Warner Electronics, Div. of Stewart-Warner Corporation, Chicago 51, Ill.	307
*Stoddart Aircraft Radio Co., Hollywood 38, Calif.	369
Stone City Machine & Tool Co., Inc., Bedford, Ind.	770
Stromberg-Carlson Company, Div. of General Dynamics Corp., Rochester 3, N. Y.	308
*Supreme Transformer Corporation, Chicago 39, Ill.	798
Surprenant Mfg. Co., Boston 8, Mass.	624
Switchcraft, Inc., Chicago 22, Ill.	1000
Sylvania Electric Products Inc., New York 19, N. Y.	312
*Symphonic Radio and Electronic Corp., New Brunswick, N. J.	351
*Syntronic Instruments, Inc., Addison, Ill.	822
Talk-A-Phone Co., Chicago 23, Ill.	132
Tansitor Electronics, Inc., Bennington, Vt.	988
*Tech-Master Corporation, Brooklyn 1, N. Y.	679
Technical Training Institute, Portland 11, Ore.	921
*TelAutograph Corporation, Los Angeles 45, Calif.	970
Telechrome Incorporated, Amityville, N. Y.	868
*Telequip Radio Company, Chicago 8, Ill.	454
*Teleradio Engineering Corporation, Wilkes Barre, Pa.	357
*Tele-Ray Tube Co., Inc., Yonkers, N. Y.	864
*TELvision Laboratories, Inc., Wauconda, Ill.	608
*Tempel Manufacturing Company, Chicago 26, Ill.	745
The Tetrad Company, Yonkers 2, N. Y.	842
Texas Instruments Incorporated, Dallas 9, Tex.	980
*Thermador Electrical Mfg. Co., Los Angeles 22, Calif.	825
*Thomas & Skinner Steel Products Co., Indianapolis 7, Ind.	318
Thomas Electronics, Inc., Passaic, N. J.	672
*Thordarson-Meissner, Mt. Carmel, Ill.	238
*Todd Electric Company, Inc., Yonkers, N. Y.	926
*B. J. Toegel, Inc., Plainfield, N. J.	548
*Torwico Electronics, Inc., Union, N. J.	1025
*Trad Electronics Corporation, Asbury Park, N. J.	688
*Transformer Manufacturers, Inc., Chicago 30, Ill.	1052
*Transitron Electronic Corporation, Wakefield, Mass.	959
Translite Electronics Corp., Chicago 39, Ill.	810
Trav-Ler Radio Corporation, Chicago 6, Ill.	320
Tresco, Inc., Philadelphia 28, Penna.	897
*Triad Transformer Corporation, Venice, Calif.	830
Triplett Electrical Instrument Co., Bluffton, Ohio	321
*Triwec-Transformer Company, Chicago 18, Ill.	524
Tung-Sol Electric Inc., Newark 4, N. J.	322
*TV Products Division, Union Electric & Mfg. Co., Jersey City 7, N. J.	618
Union City Filament Corp., Union City, N. J.	954
*Union Electric & Manufacturing Co., Jersey City 7, N. J.	804
United Condenser Corporation, New York 56, N. Y.	516
United Electronics Company, Newark 4, N. J.	323
*United Electronic Manufacturing Corp., Union City, N. J.	820
United States Dynamics Corporation, Boston 20, Mass.	997
*United States Radium Corporation, New York 7, N. Y.	324
*United Transformer Corporation, New York 13, N. Y.	418
*Unitek Corporation, Pasadena 8, Calif.	881
Universal Company, High Point, N. C.	756
University Loudspeakers, Inc., White Plains, N. Y.	847
*Utah Radio Products Co., Inc., Huntington, Ind.	328
*Utrad Corporation, Huntington, Ind.	1036
Vacuum Tube Products Co., Inc., Oceanside, Calif.	781
Valpey Crystal Corporation, Holliston, Mass.	527
Varian Associates, Palo Alto, Calif.	809
Vector Electronic Company, Glendale, Calif.	971
Vidaire Electronics Mfg. Corp., Baldwin, N. Y.	797
*Videocraft Manufacturing Co., Chicago 39, Ill.	824
Viking Industries, Inc., Canoga Park, Calif.	896
Vitramon, Inc., Bridgeport 1, Conn.	956
*V-M Corporation, Benton Harbor, Mich.	857
Vokar Corporation, Dexter, Mich.	168
Volkert Stampings, Inc., Queens Village 29, L. I., N. Y.	507
*Ward Leonard Electric Co., Mount Vernon, N. Y.	532
*Ward Products Corporation, Division of The Gabriel Company, Cleveland 15, Ohio	331
Warwick Manufacturing Corporation, Chicago 31, Ill.	332
Waterman Products Company, Inc., Philadelphia 25, Pa.	431
Waters Conley Company, Inc., Rochester, Minn.	382
*WEBCOR, Inc., Chicago 39, Ill.	375
Weller Electric Corporation, Easton, Pa.	662
Wells-Gardner & Co., Chicago 39, Ill.	334
Wm. H. Welsh Co., Inc., Chicago 16, Ill.	335
Western Electric Company, Inc., New York 5, N. Y.	336
Westinghouse Electric Corporation, Baltimore 3, Md.	337
Weston Electrical Instrument Corp., Newark 5, N. J.	338
*The Wheeler Insulated Wire Company, Inc., Waterbury 20, Conn.	392
Wheeler Laboratories, Inc., Great Neck, N. Y.	529
*Whitewater Electronics Inc., Whitewater, Wis.	758
*Wilcox Electric Company, Inc., Kansas City 27, Mo.	339
Wind Turbine Company, West Chester, Pa.	653
Winston Electronics, Inc., Philadelphia 27, Pa.	957
*Wirco Electronics, Inc., El Monte, Calif.	1049
Wire Company of America, Santa Barbara, Calif.	890
*Wirt Company, Philadelphia 44, Penna.	406
*Woodward-Schumacher Electric Corp., Chicago 22, Ill.	606
*Worthco Corporation, Beverly Hills, Calif.	785
Wright Zimmerman, Inc., New Brighton, Minn.	683
The Yale & Towne Manufacturing Co., Powdered Metal Products Division, Franklin Park, Ill.	539
*The Zell Products Corp., Norwalk, Conn.	342
Zenith Radio Corporation, Chicago 39, Ill.	343
Z & W Mfg. Corp., Wickliffe, Ohio	819

NUMERICAL LIST

EIA Production Source Code Symbols

Code No.	Company
1	*Fastex Division, Illinois Tool Works, Des Plaines, Ill.
101	*Admiral Corporation, Chicago 47, Ill.
102	Aerovox Corporation, New Bedford, Mass.
106	Allen-Bradley Company, Milwaukee 4, Wis.
107	The Alliance Manufacturing Co., Inc., Alliance, Ohio
109	American Condenser Corporation, Chicago 40, Ill.
110	All Star Products, Inc., Defiance, Ohio
111	Amperex Electronic Corporation, Hicksville, L. I., N. Y.
113	*Andrea Radio Corporation, Long Island City 1, N. Y.
115	A. R. F. Products, Inc., River Forest, Ill.
116	The Arnold Engineering Company, Sub. of Allegheny Ludlum Steel Corp., Marengo, Ill.
119	Automatic Manufacturing Division, General Instrument Corp., Newark 4, N. J.
120	Automatic Radio Mfg. Co., Inc., Boston 15, Mass.
122	The Bead Chain Manufacturing Co., Bridgeport 5, Conn.
125	Bendix Radio, Division of Bendix Aviation Corporation, Baltimore 4, Md.
128	Bliley Electric Company, Erie, Pa.
132	Talk-A-Phone Co., Chicago 23, Ill.
133	C. F. Cannon Co., Springwater, N. Y.
134	Centralab, Div. of Globe-Union Inc., Milwaukee 1, Wis.
135	Chicago Condenser Corporation, Chicago 47, Ill.
137	Chicago Telephone Supply Corp., Elkhart, Ind.
138	*Chicago Standard Transformer Division, Essex Wire Corp., Chicago 18, Ill.
139	Cinch Manufacturing Corporation, Chicago 24, Ill.
140	Clarostat Mfg. Co., Inc., Dover, New Hampshire
141	*Coil Engineering & Mfg. Co., Inc., Roanoke, Ind.

Code No.	Company
145	*Consolidated Radio Products Co., Chicago 10, Ill.
146	Continental Carbon, Div. of Wirt Company, Cleveland 11, Ohio
147	Continental Electric Company, Chicago 2, Ill.
148	Corning Glass Works, Corning, N. Y.
149	Cornish Wire Company, Inc., New York 7, N. Y.
150	*Crescent Industries, Inc., Chicago 31, Ill.
151	Croname, Incorporated, Chicago 13, Ill.
154	*Tobe Deutschmann Corporation, Norwood, Mass.
155	DeWald Radio Mfg. Corp., Long Island City 1, N. Y.
156	Wilbur B. Driver Company, Newark 4, N. J.
158	Allen B. DuMont Laboratories, Inc., Clifton, N. J.
159	*DX Radio Products Company, Inc., Chicago 47, Ill.
160	*Hugh H. Eby Company, Philadelphia 44, Penna.
161	Eckstein Radio & Television Co., Minneapolis 6, Minn.
162	Eitel-McCullough, Inc., San Bruno, Calif.
163	Hi-Q Division Aerovox Corporation, Olean, N. Y.
164	The Electro Motive Mfg. Co., Inc., Willimantic, Conn.
166	*Chicago Electronic Engineering Co., Chicago 47, Ill.
168	Vokar Corporation, Dexter, Michigan
169	*Electronic Specialty Co., Los Angeles 39, Calif.
170	Electronic Tube Corporation, Philadelphia 18, Pa.
171	*Emerson Radio & Phonograph Corp., Jersey City 2, N. J.
172	Ensign Coil Company, Chicago 23, Ill.
173	Erie Resistor Corporation, Erie, Pa.
175	*Essex Wire Corporation, Fort Wayne 6, Ind.
178	John E. Fast & Company, Chicago 18, Ill.
179	Federal Telephone and Radio Company, Clifton, N. J.
185	Motorola Inc., Chicago 51, Ill.
187	*Gates Radio Company, Quincy, Ill.
188	General Electric Company, Syracuse 1, N. Y.
189	*General Electronics, Division of Arcturus Electronics Inc., Paterson 3, N. J.
190	The General Industries Company, Elyria, Ohio
191	General Instrument Corporation, Newark 4, N. J.
193	General Magnetic Corporation, Detroit 34, Mic'
194	General Radio Company, Cambridge 39, Mass.
197	The Fred Goat Co., Inc., Brooklyn 17, N. Y.
198	*Guthman Division, Essex Wire Corp., Chicago 7, Ill.
199	The Hallicrafters Company, Chicago 24, Ill.
200	Olympic Radio & Television, Div. Unitronics Corp., Long Island City 1, N. Y.
201	Hammarlund Mfg. Co., Inc., New York 1, N. Y.
204	Hawley Products Company, St. Charles, Ill.
205	Haydu Electronic Products, Inc., Plainfield, N. J.
207	Hoffman Electronics Corporation, Los Angeles 7, Calif.
210	CBS-Hytron, Division of Columbia Broadcasting System, Inc., Danvers, Mass.
211	The Indiana Steel Products Company, Valparaiso, Ind.
214	International Resistance Company, Philadelphia 8, Pa.
216	Jackson Electrical Instrument Co., Dayton 2, Ohio
218	*Jefferson Electric Company, Bellwood, Ill.
220	Jensen Manufacturing Company, Div. of The Muter Company, Chicago 38, Ill.
221	JFD Manufacturing Co., Inc., Brooklyn 4, N. Y.
222	E. F. Johnson Company, Waseca, Minn.
223	Kerrigan Lewis Manufacturing Co., Chicago 51, Ill.
224	Kester Solder Company, Chicago 39, Ill.
225	King Laboratories, Inc., Syracuse 3, N. Y.
228	Lenz Electric Manufacturing Co., Chicago 47, Ill.
230	Littlefuse, Incorporated, Des Plaines, Ill.
231	Machlett Laboratories, Incorporated, Springdale, Conn.
232	The Magnavox Company, Fort Wayne 4, Ind.
235	P. R. Mallory & Co., Inc., Indianapolis 6, Ind.
236	Measurements Corporation, Boonton, N. J.
238	*Thordarson-Meissner, Mt. Carmel, Ill.
239	Merit Coil & Transformer Corp., Chicago 40, Ill.
240	Micamold Electronics Manufacturing Corp., Sub. General Instrument Corp., Brooklyn 37, N. Y.
242	James Millen Manufacturing Co., Inc., Malden 48, Mass.
244	The Muter Company, Chicago 5, Ill.
245	*National Company, Inc., Malden 48, Mass.
246	National Fabricated Products, Div. of Hoffman Electronics Corp., Chicago 47, Ill.
248	Arvin Industries, Inc., Columbus, Ind.
249	Oak Mfg. Co., Chicago 10, Ill.
250	The Ohio Carbon Company, Cleveland 11, Ohio
251	Ohmite Manufacturing Company, Skokie, Ill.
252	DuKane Corporation, St. Charles, Ill.
254	Packard-Bell Electronics Corp., Los Angeles 64, Calif.
260	Philco Corporation, Philadelphia 34, Pa.
262	*Philmore Manufacturing Co., Inc., New York 3, N. Y.
264	Pilot Radio Corporation, Long Island City 1, N. Y.
270	Quam-Nichols Company, Chicago 37, Ill.
273	Radio Condenser Company, Camden 3, N. J.
274	Radio Corporation of America, Camden, N. J.
276	Radio Engineering Laboratories, Inc., Long Island City 1, N. Y.
279	*Peirce Wire Recorder Corporation, Chicago 31, Ill.
280	Raytheon Manufacturing Company, Waltham 54, Mass.
281	Rea Magnet Wire Company, Inc., Fort Wayne 4, Ind.
284	Remler Company, San Francisco 10, Calif.
285	The Rola Company, Inc., Div. of The Muter Company, Cleveland 14, Ohio
286	The Ross Manufacturing Company, Chicago 45, Ill.
291	Sentinel Radio Company, Sub. Magnavox Company, Evanston, Ill.
293	*Sherron Electronics Company, Brooklyn 6, N. Y.
294	F. W. Sickles Division, General Instrument Corp., Chicopee, Mass.
295	*Mark Simpson Manufacturing Co., Inc. Long Island City 3, N. Y.
296	*Solar Manufacturing Corporation, Los Angeles 58, Calif.
299	*Sparton Electronics Division, The Sparks-Withington Company, Jackson, Mich.
300	Speer Resistor Corporation, Saint Marys, Pa.
303	Sprague Electric Company, North Adams, Mass.
304	Stackpole Carbon Company, St. Marys 3, Pa.
305	*Standard Coil Products Co. Inc., Melrose Park, Ill.
307	Stewart-Warner Electronics, Div. of Stewart-Warner Corporation, Chicago 51, Ill.
308	Stromberg-Carlson Company, Div. of General Dynamics Corp., Rochester 3, N. Y.
312	Sylvania Electric Products Inc., New York 19, N. Y.
318	*Thomas & Skinner Steel Products Co., Indianapolis 7, Ind.
320	Trav-Ler Radio Corporation, Chicago 6, Ill.
321	Triplett Electrical Instrument Co., Bluffton, Ohio
322	Tung-Sol Electric Inc., Newark 4, N. J.
323	United Electronics Company, Newark 4, N. J.
324	*United States Radium Corporation, New York 7, N. Y.
328	*Utah Radio Products Co., Inc., Huntington, Ind.
331	*Ward Products Corporation, Division of The Gabriel Company, Cleveland 15, Ohio
332	Warwick Manufacturing Corporation, Chicago 31, Ill.
334	Wells-Gardner & Co., Chicago 39, Ill.
335	Wm. H. Welsh Co., Inc., Chicago 16, Ill.
336	Western Electric Company, Inc., New York 5, N. Y.
337	Westinghouse Electric Corporation, Baltimore 3, Md.
338	Weston Electrical Instrument Corp., Newark 5, N. J.
339	*Wilcox Electric Company, Inc., Kansas City 27, Mo.
342	*The Zell Products Corp., Norwalk, Conn.
343	Zenith Radio Corporation, Chicago 39, Ill.
345	*The Astatic Corporation, Conneaut, Ohio
351	*Symphonic Radio and Electronic Corp., New Brunswick, N. J.
352	*Magnetic Windings Division, Essex Wire Corporation, Easton, Penna.
356	*R. Prescott & Son, Inc., Keeseville, N. Y.
357	*Teleradio Engineering Corporation, Wilkes Barre, Pa.
360	*Gavitt Wire & Cable Co., Division of American Hard Rubber Co., Brookfield, Mass.
366	New York Transformer Co., Inc., Alpha, N. J.
367	National Moldite Company, Newark 5, N. J.
368	*Santay Corporation, Chicago 24, Ill.
369	*Stoddart Aircraft Radio Co., Hollywood 38, Calif.
370	*Carr Fastener Company, Division of United-Carr Fastener Corp., Cambridge 42, Mass.
371	*Best Manufacturing Co., Inc., Irvington 11, N. J.
372	*Holyoke Wire and Cable Corporation, Holyoke, Mass.
375	*WEBCOR, Inc., Chicago 39, Ill.
376	Hazeltine Corporation, Little Neck, 62, N. Y.
380	*Radio Receptor Company, Inc., New York 11, N. Y.
382	Waters Conley Company, Inc., Rochester, Minn.
384	*Red Lion Cabinet Company, Red Lion, Pa.
385	*Dearborn Glass Company, Bedford Park, Ill.
391	Altec Lansing Corporation, Anaheim, Calif.
392	*The Wheeler Insulated Wire Company, Inc., Waterbury 20, Conn.
394	*Foster Transformer Company, Cincinnati 23, Ohio
396	General Cement Mfg. Co., Div. Textron, Inc., Rockford, Ill.
402	Andrew Corporation, Chicago 19, Ill.
406	*Wirt Company, Philadelphia 44, Penna.
409	British Industries Corporation, Port Washington, L. I., N. Y.
411	Hardwick, Hindle, Inc., Newark 5, N. J.
412	*General Transformer Company, Homewood, Ill.
413	*Acme Electric Corporation, Cuba, N. Y.
418	*United Transformer Corporation, New York 13, N. Y.
423	North American Philips Company, Inc., New York 17, N. Y.
425	*Essex Electronics, Berkeley Heights, N. J.
427	Communication Measurements Laboratory, Inc., Plainfield, N. J.
428	*Schulmerich Electronics, Inc., Sellersville, Penna.
431	Waterman Products Company, Inc., Philadelphia 25, Pa.
433	*Cleveland Electronics, Inc., Cleveland 3, Ohio
437	*Newcomb Electronics Corporation, Hollywood 38, Calif.
438	The Gudeman Company, Chicago 10, Ill.
439	Collins Radio Company, Cedar Rapids, Ia.
442	J-B-T Instruments, Inc., New Haven 8, Conn.
446	Good-All Electric Mfg. Co., Ogallala, Nebr.
450	*Columbus Process Co., Inc., Columbus, Ind.

Code No.	Company
454	*Telequip Radio Company, Chicago 8, Ill.
457	Sprague of Wisconsin, Inc., Grafton, Wis.
461	Barker & Williamson, Inc., Bristol, Penna.
464	*Q. L. C. Corporation, Summit, N. J.
465	Oxford Electric Corporation, Chicago 15, Ill.
466	Delco Radio Division, General Motors Corporation, Kokomo, Ind.
467	Grigsby-Allison Company, Inc., Arlington Heights, Ill.
472	*Pyramid Electric Company, North Bergen, N. J.
475	*Glass Products Company, Chicago 37, Ill.
482	Rada Products Co., Chicago 12, Ill.
484	*Shurite Meters (J-B-T Instruments, Inc.), New Haven 8, Conn.
489	*Radio Television Products Corp., Grass Lake, Mich.
501	*Hupp Electronics Company, Carlisle, Pa.
503	Caledonia Electronics & Transformer Corp., Caledonia, N. Y.
504	*The James Knights Company, Sandwich, Ill.
505	Precision Apparatus Company, Inc., Glendale 27, Long Island, N. Y.
507	Volkert Stampings, Inc., Queens Village 29, L. I., N. Y.
508	The Hickok Electrical Instrument Co., Cleveland 8, O.
515	*Electronic Components Corporation, Chicago 8, Ill.
516	United Condenser Corporation, New York 56, N. Y.
518	*Sampson Electric Products Co., Clinton, N. C.
520	Schneider & Marquard, Inc., Brooklyn 17, N. Y.
524	*Triwec Transformer Company, Chicago 18, Ill.
525	Crucible Steel Company of America, New York 17, N. Y.
527	Valpey Crystal Corporation, Holliston, Mass.
529	Wheeler Laboratories, Inc., Great Neck, N. Y.
530	*Clippard Instrument Laboratory, Inc., Cincinnati 24, Ohio
532	*Ward Leonard Electric Co., Mount Vernon, N. Y.
539	The Yale & Towne Manufacturing Co., Powdered Metal Products Division, Franklin Park, Ill.
540	*Radio Industries, Inc., Chicago 40, Ill.
541	*Industrial Television, Inc., Clifton, N. J.
545	*Electronic Enterprises, Inc., Newark 4, N. J.
547	*Anaconda Wire & Cable Company, Hastings-on-Hudson 6, N. Y.
548	*B. J. Toegel, Inc., Plainfield, N. J.
549	*Mid-West Coil & Transformer Co., Chicago 14, Ill.
550	*Standard Winding Company, Newburgh, N. Y.
551	American Television & Radio Co., St. Paul 1, Minn.
552	Otis Radio & Electric Corp., Hawarden, Iowa
554	Amphenol Electronics Corporation, Chicago 50, Ill.
563	J. W. Davis & Company, Dallas 35, Texas
569	*Electrical Utilities Company, La Salle, Ill.
570	*Leonard Electric Products Co., Inc., Brooklyn 32, N. Y.
571	*General Cable Corporation, Perth Amboy, N. J.
572	*F. & V. Coil Winding Corporation, Newark 5, N. J.
573	Alcon Metal Products, Inc., Chicago 47, Ill.
574	*Stanwyck Winding Company, Newburgh, N. Y.
575	*Heppner Manufacturing Company, Round Lake, Ill.
579	Belden Manufacturing Company, Chicago 44, Ill.
580	*Rowe Industries, Toledo 9, Ohio
582	*General Precision Laboratory Inc., Pleasantville, N. Y.
586	Drake Manufacturing Company, Chicago 22, Ill.
587	Radio Specialty Manufacturing Co., Portland 14, Ore.
588	Barnes Metal Products Company, Chicago 23, Ill.
589	David Bogen Co. Division, Unitronics Corp., Paramus, N. J.
590	Shure Brothers, Inc., Evanston, Ill.
593	Kip Electronics Corporation, Stamford, Conn.
594	*Kobzy Tool Company, Chicago 22, Ill.
596	*Gramer-Halldorson Transformer Corp., Chicago 39, Ill.
599	*Elco Corporation, Philadelphia 24, Penna.
604	The Staver Company Incorporated, Bay Shore, L. I.
606	*Woodward-Schumacher Electric Corp., Chicago 22, Ill.
607	Consolidated Wire & Associated Companies, Chicago 16, Ill.
608	*TELvision Laboratories, Inc., Wauconda, Ill.
610	Carter Parts Company, Chicago 10, Ill.
614	Simpson Electric Company, Chicago 44, Ill.
616	*Illinois Condenser Company, Chicago 22, Ill.
617	RAM Electronics, Inc., Irvington-On-Hudson, N. Y.
618	*TV Products Division, Union Electric & Mfg. Co., Jersey City 7, N. J.
620	Kay Electric Company, Pine Brook, N. J.
621	*Polan Industries, Inc., Huntington 19, W. Va.
624	Surprenant Mfg. Co., Boston 8, Mass.
628	*Davis Electric Company, Cape Girardeau, Mo.
631	*Pickering and Company, Inc., Oceanside, N. Y.
632	*El-Rad Manufacturing Co., Chicago 18, Ill.
637	*Central Coil Company, Indianapolis 22, Ind.
638	Industrial Development Engineering Associates, Inc., Indianapolis 26, Ind.
642	Mycalex Corporation of America, Clifton, N. J.
643	*National Aeronautical Corporation, Fort Washington, Pa.
644	General Railway Signal Company, Rochester 2, N. Y.
647	Kimble Glass Company, Sub. of Owens-Illinois Glass Co., Toledo 1, Ohio
648	*American Radionic Co., Inc., Danbury, Conn.
649	Electro-Voice, Inc., Buchanan, Michigan
653	Wind Turbine Company, West Chester, Pa.
657	Lowell Manufacturing Company, St. Louis 17, Mo.
658	Sangamo Electric Company, Electronic Components Division, Springfield, Ill.
662	Weller Electric Corporation, Easton, Pa.
665	Penn Tran Corporation, Bellefonte, Penna.
668	*Standard Electrical Products Co., Dayton, 3, Ohio
670	Glaser-Steers Corporation, Belleville 9, N. J.
671	*Lytle Engineering & Mfg. Co., Chicago 3, Ill.
672	Thomas Electronics, Inc., Passaic, N. J.
677	*Rogers Electronic Corp., New York 12, N. Y.
679	*Tech-Master Corporation, Brooklyn 1, N. Y.
680	Conrac, Incorporated, Glendora, Calif.
681	*American Lava Corporation, Chattanooga 5, Tenn.
682	*Electrical Windings, Inc., Chicago 39, Ill.
683	Wright Zimmerman, Inc., New Brighton, Minn.
684	Sarkes Tarzian, Inc., Bloomington, Ind.
687	*Hillburn Electronic Products Co., Brooklyn 22, N. Y.
688	*Trad Electronics Corporation, Asbury Park, N. J.
689	Aladdin Electronics, a Division of Aladdin Industries, Incorporated, Nashville 10, Tenn.
692	CELCO (Constantine Engineering Laboratories Co.), Mahwah, N. J.
693	Multi-Tron Laboratory, Inc., Chicago 44, Ill.
694	Standard Electronics, Division of Radio Engineering Labs., Inc., Long Island City 1, N. Y.
695	Basler Electric Company, Highland, Ill.
697	*Phalo Plastics Corporation, Worcester 8, Mass.
698	Sheffco Mfg. Corp., Fairview, N. J.
699	Keystone Electronics Company, Newark 4, N. J.
700	*The Radion Corporation, Chicago 14, Ill.
701	Forbes & Wagner, Inc., Silver Creek, N. Y.
703	Prodelin, Inc., Kearny, N. J.
704	Cosmic Radio Corporation, New York 59, N. Y.
705	*Ajax Condenser Co., Inc., Chicago 14, Ill.
706	Pioneer Electronics Corporation, Los Angeles 64, Calif.
710	*Standard Condenser Corp., Chicago 13, Ill.
711	*Controls Company of America, Schiller Park, Ill.
719	*Carbonneau Industries, Grand Rapids 2, Mich.
720	Methode Manufacturing Corp., Chicago 47, Ill.
721	*Rollan Electric Co., Chicago 20, Ill.
722	Milwaukee Resistor Co., Milwaukee 4, Wis.
723	Northwest Plastics, Inc., St. Paul 1, Minn.
724	Jeffers Electronics Division, Speer Carbon Company, Dubois, Penna.
726	Penn Television Products Co., Philadelphia 34, Pa.
730	Jersey Specialty Co., Inc., Mountainview, N. J.
732	Radio Materials Corporation, Chicago 13, Ill.
733	Alpha Metals, Inc., Jersey City 4, N. J.
734	Fretco Incorporated, Pittsburgh 13, Penna.
736	*Paul & Beekman, Inc., Philadelphia 40, Pa.
738	*Lewis and Kaufman, Ltd., Los Gatos, Calif.
739	Oak Electronics Company, Buffalo 3, N. Y.
740	Olympic Products Co., Inc., Alpha 1, N. J.
742	*Esquire Radio Corporation, Brooklyn 19, N. Y.
743	*Quik-Chek Corporation, Philadelphia 41, Pa.
744	Hughes Aircraft Company, Culver City, Calif.
745	*Tempel Manufacturing Company, Chicago 26, Ill.
746	*L. H. Frost & Co., Inc., Grand Rapids 8, Mich.
748	*Russell Speaker Company, Chicago 21, Ill.
749	*National Electronics, Incorporated, Geneva, Ill.
750	Mosley Electronics, Incorporated, St. Louis 14, Mo.
752	Electronic Devices, Inc., Brooklyn 15, N. Y.
756	Universal Company, High Point, N. C.
757	*Grand Transformers, Inc., Grand Haven, Mich.
758	*Whitewater Electronics Inc., Whitewater, Wis.
761	*Planet Manufacturing Corp., Bloomfield, N. J.
762	Erca Tool Die & Stamping Co., Brooklyn 22, N. Y.
767	Quincy Speaker Manufacturing Corp., Quincy, Ill.
768	Microtran Company, Inc., Valley Stream, L. I., N. Y.
770	Stone City Machine & Tool Co., Bedford, Ind.
771	Penta Laboratories, Inc., Santa Barbara, Calif.
773	*The Forest Electric Company, Forest Park, Ill.
776	*Ogden Coil & Transformer Co., Chicago 12, Ill.
780	DeJur-Amsco Corporation, Long Island City, N. Y.
781	Vacuum Tube Products Co., Inc., Oceanside, Calif.
782	Spencer Kennedy Laboratories, Inc., Boston 35, Mass.
783	Eldico Electronics, Division of Radio Engineering Laboratories, Inc., Long Island City, N. Y.
784	Johnson Electronics Inc., Orlando, Fla.
785	*Worthco Corporation, Beverly Hills, Calif.
786	*Hinners-Galanek Radio Corp., Cavalier Radio & Television Div., Rego Park 74, N. Y.
787	*Sonotone Corporation, Elmsford, N. Y.
789	McGregor Electronic Industries, Inc., McGregor, Ia.
791	*Hopkins Engineering Company, San Fernando, Calif.
792	Atlantic Wire & Cable Corp., College Point 56, N. Y.
793	McIntosh Laboratory, Inc., Binghamton, N. Y.

Code No.	Company
794	Harman-Kardon, Inc., Westbury, Long Island, N. Y.
797	Vidaire Electronics Mfg. Corp., Baldwin, N. Y.
798	*Supreme Transformer Corporation, Chicago 39, Ill.
799	*California Magnetic Control Corp., North Hollywood, Calif.
804	*Union Electric & Manufacturing Company, Jersey City 7, N. J.
806	*Gordos Corporation, Bloomfield, N. J.
808	*Henald Manufacturing Co. Inc., Piper City, Ill.
809	Varian Associates, Palo Alto, Calif.
810	Translite Electronics Corp., Chicago 39, Ill.
811	Continental Electronics Corp., Philadelphia 32, Penna.
812	*Bradley Laboratories, Inc., New Haven 11, Conn.
813	Adler Electronics Inc., New Rochelle, N. Y.
815	San Fernando Electric Mfg. Co., San Fernando, Calif.
816	Dale Products, Inc., Columbus, Nebr.
817	Brubaker Electronics, Inc., Culver City, Calif.
819	Z & W Mfg. Corp., Wickliffe, Ohio
820	*United Electronic Manufacturing Corp., Union City, N. J.
822	*Syntronic Instruments, Inc., Addison, Ill.
824	*Videocraft Manufacturing Co., Chicago 39, Ill.
825	*Thermador Electrical Mfg. Co., Los Angeles 22, Calif.
828	Midland Manufacturing Co., Inc., Kansas City 15, Kan.
830	*Triad Transformer Corporation, Venice, Calif.
831	*Better Coil & Transformer Corp., Goodland, Ind.
832	McCoy Electronics Co., Mt. Holly Springs, Penna.
834	*Mel-Rain Corporation, Indianapolis 4, Ind.
835	*Ratel, Inc., Goleta, Calif.
836	*National Video Corporation, Chicago 32, Ill.
837	*Carol Electronics Corporation, Martinsburg, W. Va.
840	Orradio Industries, Inc., Opelika, Ala.
841	Central Electronic Manufacturers, Inc., Denville, N. J.
842	The Tetrad Company, Yonkers 2, N. Y.
845	International Rectifier Corporation, El Segundo, Calif.
847	University Loudspeakers, Inc., White Plains, N. Y.
848	Onondaga Pottery Company, Electronics Division, Syracuse 1, N. Y.
850	Chromatic Television Laboratories, Inc., New York 36, N. Y.
851	R. L. Drake Company, Miamisburg, Ohio
852	Andrews Tower, Inc., Fort Worth 11, Tex.
855	International Instruments Inc., New Haven 15, Conn.
856	Clevite Transistor Products, Division of Clevite Corporation, Waltham 54, Mass.
857	*V-M Corporation, Benton Harbor, Mich.
862	Cal-Tronics Corporation, Los Angeles 45, Calif.
863	*James Vibrapowr Company, Chicago 18, Ill.
864	*Tele-Ray Tube Co., Inc., Yonkers, N. Y.
866	*Industrial Hardware Manufacturing Co., Inc., New York 12, N. Y.
867	C-B-C Electronics Co., Inc., Philadelphia 33, Pa.
868	Telechrome Incorporated, Amityville, N. Y.
869	*Kline Iron and Steel Company, Columbia, S. C.
870	Cubic Corporation, San Diego 11, Calif.
871	Precision Electronics Inc., Franklin Park, Ill.
872	S & A Electronics, Toledo 5, Ohio
878	Acro Products Company, Philadelphia 28, Penna.
879	Litton Industries, Inc., Beverly Hills, Calif.
881	*Unitek Corporation, Pasadena 8, Calif.
884	*C R T Electronics Corp., Mt. Vernon, N. Y.
885	Miniature Electronics Components, Nashville 4, Tenn.
886	Calvideo Tube Corporation, Los Angeles 45, Calif.
887	International Telemeter Corporation, Los Angeles 25, Calif.
888	Connector Corporation, Chicago 30, Ill.
890	Wire Company of America, Santa Barbara, Calif.
891	Southern Electronics Company, Greeneville, Tenn.
892	*American Transformer Corp., Chicago 7, Ill.
893	Armel Electronics Inc., Brooklyn 32, N. Y.
894	Hy-Gain Antenna Products Company, Lincoln 4, Nebr.
895	*Dinion Coil Co., Inc., Caledonia, N. Y.
896	Viking Industries, Inc., Canoga Park, Calif.
897	Tresco, Inc., Philadelphia 28, Penna.
898	Convair, Pomona Division, General Dynamics Corp., Pomona, Calif.
900	ACF Electronics, Division of ACF Industries, Inc., Alexandria, Va.
901	*Cargo Packers, Inc., Glendale 27, N. Y.
902	Elgin Metalformers Corporation, Elgin, Ill.
903	D & M Products, Detroit 35, Mich.
904	Pan-Electronics Corporation, Griffin, Ga.
906	*Coilcraft, Incorporated, Cary, Ill.
909	*Chester Cable Corp., Chester, N. Y.
910	*Aerolite Electronics Corp., Union City, N. J.
911	International Electronic Industries, Inc., Nashville 1, Tenn.
912	*Blackburn Electronic Corporation, Wyoming, Pa.
913	General Products Corporation, Union Springs, N. Y.
915	Inductor Engineering, Inc., Lewes, Del.
917	Resitron Laboratories, Inc., Los Angeles 25, Calif.
918	*Oaktron Industries Inc., Monroe, Wis.
920	The Antenna Specialists Co., Cleveland 6, Ohio
921	Technical Training Institute, Portland 11, Ore.
922	Standard Television Tube Corp., New Orleans 12, La.
923	Jerrold Electronics Corporation, Philadelphia 3, Pa.
924	Radio Development & Research Corp., Paterson 3, N. J.
925	Kin Tel, Division of Cohu Electronics, Inc., San Diego 11, Calif.
926	*Todd Electric Company, Inc., Yonkers, N. Y.
927	General Mills, Inc., Mechanical Division, Minneapolis 13, Minn.
928	*Acme Coil & Transformer Corp., Chicago 14, Ill.
929	Parker Metal Goods Company, Worcester, Mass.
931	Skiatron Electronics & Television Corp., New York 14, N. Y.
933	*Magnetic Coil Manufacturing Company, Chicago 22, Ill.
934	*Oaktron Electric Company, Tinley Park, Ill.
935	*Electrons, Incorporated, Newark 3, N. J.
936	*Hamilton-Hall Mfg. Company, Milwaukee 2, Wis.
938	Farnsworth Electronics Company, Fort Wayne, Ind.
940	Bomac Laboratories, Inc., Beverly, Mass.
941	Electronic Engineering Company of California, Santa Ana, Calif.
942	Federated Metals Division, American Smelting and Refining Co., New York 5, N. Y.
943	G. M. Giannini & Co., Inc., Pasadena 1, Calif.
944	Insulated Circuits, Inc., West Caldwell, N. J.
945	*The J & G Machine Co., Inc., Worcester 4, Mass.
946	Mechanical Steel Tubing Corp., Bronx 59, N. Y.
947	Pacific Semiconductors, Inc., Culver City, Calif.
948	The Radix Wire Company, Euclid 32, Ohio
949	*Apex Coil and Transformer Corporation, Chicago 8, Ill.
951	Kost Products Company, Inc., Chicago 39, Ill.
952	Rhein Sound Systems, Inc., New Haven 5, Conn.
953	Scientific Radio Products, Inc., Omaha 8, Nebr.
954	Union City Filament Corp., Union City, N. J.
956	Vitramon, Inc., Bridgeport 1, Conn.
957	Winston Electronics, Inc., Philadelphia 27, Pa.
959	*Transitron Electronic Corporation, Wakefield, Mass.
960	*Ontario Industries, Inc., Hornell, N. Y.
961	Anton Electronics Laboratories, Inc., Sub. U. S. Hoffman Machinery Corp., Brooklyn 37, N. Y.
963	Foto-Video Laboratories, Inc., Cedar Grove, N. J.
964	Huggins Laboratories, Inc., Menlo Park, Calif.
965	Moloney Electric Company, St. Louis 20, Mo.
966	Mullenbach Division of Electric Machinery Mfg. Co., Los Angeles 58, Calif.
967	North American Aviation, Inc., Downey, Calif.
968	Rapid Die and Molding Co., Schiller Park, Ill.
970	*TelAutograph Corporation, Los Angeles 45, Calif.
971	Vector Electronic Company, Glendale, Calif.
972	*Industrial Tubes, Inc., Geneva, Ill.
973	*PCA Electronics Inc., Sepulveda, Calif.
974	*Lectrohm, Inc., Chicago 30, Ill.
975	*Sherold Crystals Inc., Kansas City 8, Mo.
976	*Model Engineering & Manufacturing, Inc., Chicago 18, Ill.
977	*Filtors, Inc., Port Washington, L. I., N. Y.
978	American Electronics Company, New York 59, N. Y.
979	Ratigan Electronics Inc., Los Angeles 11, Calif.
980	Texas Instruments Incorporated, Dallas 9, Tex.
982	*Precision Coil Manufacturing Company, Santa Monica, Calif.
983	*Gonset Division, L. A. Young Spring & Wire Corp., Burbank, Calif.
984	*Electro-Winders Co. Inc., Covina, Calif.
985	*Bartlett Manufacturing Company, Glenview, Ill.
987	*Florida-Merit Inc., Hollywood, Fla.
988	Tansitor Electronics, Inc., Bennington, Vt.
989	*Marvel Electric Corporation, Chicago 22, Ill.
990	General Transistor Corporation, Jamaica 35, N. Y.
991	Benson-Lehner Corporation, Los Angeles 64, Calif.
992	Grayhill, La Grange, Ill.
993	Midwest Speaker Company, McGregor, Iowa
994	Eberline Instrument Division, Reynolds Electrical and Engineering Co., Santa Fe, New Mexico
995	Standard Crystal Company, Kansas City 8, Mo.
996	*Grand Coil Winders, Grand Haven, Mich.
997	United States Dynamics Corporation, Boston 20, Mass.
999	*National Tel-Tronics Corp., Yonkers, N. Y.
1000	Switchcraft, Inc., Chicago 22, Ill.
1002	*The Amplifone Corporation, Chicago 40, Ill.
1003	*Fugle-Miller Laboratories, Clark, N. J.
1004	*Jet Electronics Corporation, Glendale 4, Calif.
1005	*Quality Transformer & Coil Co., Inc., Chicago 14, Ill.
1006	*Fischer Electric Co., Inc., De Leon Springs, Fla.
1007	Hycon Electronics, Inc., Pasadena, Calif.
1008	Robertshaw-Fulton Controls Company, Aeronautical Division, Anaheim, Calif.
1010	*Milwaukee Transformer Company, Milwaukee 9, Wis.
1011	*Park Products Company, Cleveland 3, Ohio
1012	Red Bank Division, Bendix Aviation Corp., Long Branch, N. J.
1013	*Ion Capacitor Corp., Columbia City, Ind.

Code No.	Company
1014	*Burnell & Co., Inc., Pelham Manor, N. Y.
1016	*Kemtron Electron Products, Inc., Newburyport, Mass.
1017	Campbell Industries, Inc., Dover, N. H.
1019	Communication Accessories Company, Lee's Summit, Mo.
1022	International Electronics Corp., New York 12, N. Y.
1023	International Electronic Research Corp., Burbank, Calif.
1024	Leach Corporation, Compton, Calif.
1025	*Torwico Electronics, Inc., Union, N. J.
1026	Soundolier, Inc., St. Louis 22, Mo.
1027	Presto Recording Company, Paramus, N. J.
1028	*Gray & Kuhn, Inc., Roslyn Heights, N. Y.
1030	*NYT Electronics, Inc., Burbank, Calif.
1031	*A.L.A. Industries, Inc., Harrison, N. Y.
1033	*Electro Engineering Works, San Leandro, Calif.
1035	*Associated Transformer Corp., Chicago 47, Ill.
1036	*Utrad Corporation, Huntington, Ind.
1038	*Holiday Transformer Corporation, Chicago 14, Ill.
1039	Cal-Ros Industries, Inc., Chicago 22, Ill.
1040	Ferranti Electric, Inc., Brooklyn 1, N. Y.
1041	*Mayfair Molded Products Corporation, Schiller Park, Ill.
1042	Rheem Electronics Division, Rivera, Calif.
1043	*Advance Industries, Inc., Cambridge 39, Mass.
1044	*Bradford Components, Inc., Salamanca, N. Y.
1045	Gremar Manufacturing Co., Inc., Wakefield, Mass.
1046	*Dunleavey Electronics Corporation, Stoughton, Mass.
1047	*Power Conversions Corp., Chicago 12, Ill.
1048	*Columbia Technical Corporation, Woodside 77, N. Y.
1049	*Wireco Electronics, Inc., El Monte, Calif.
1050	Pomona Electronics Co., Inc., Pomona, Calif.
1051	Audio Devices, Inc., Rectifier Division, Santa Ana, Calif.
1052	*Transformer Manufacturers, Inc., Chicago 30, Ill.
1053	Industro Transistor Corporation, Long Island City 6, N. Y.
1054	Kentron Hawaii Ltd., Honolulu 14, Hawaii
1055	*Rogers Corporation, Rogers, Conn.
1056	*Gefco Manufacturing Company, Grayslake, Ill.
1057	*Gahagan, Inc., Esmond 17, R. I.

PHOTOFACT* Folder
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 353

RCA Victor Models 21CS7815, U, 21CS7817, U, 21CT7835, U, 21CT7837, U, 21CT7855, U, 21CT7857, U, 21CT7865, U, 21CT7866, U, 21CT7867, U (Ch. CTC5, A, B, C, D, E) were covered in Photofact Folder 11 — Set 353.

Models 21CT8785, U, 21CT8787, U (Ch. CTC5F, H) are added along with late production changes in the publication of this bulletin.

Ch. CTC5, A, B, C, D, E

COMPONENT CHANGES

A 56mmf @ 500V ceramic disc capacitor is added from pin 8 of V11B (AGC Clamper-AF Amp.) to ground.

C67 is omitted.

A 56K 1 watt resistor is added from pin 9 of V18 (Focus Rect.) to R17 (Focus).

A 10K $\frac{1}{2}$ watt resistor is added between C90 and R103.

R50 is increased from 8200Ω to 10K.

R76 and R77 are increased in wattage from 1 watt to 2 watts.

Ch. CTC5F, H

UHF TUNER CHANGED

UHF Tuner #KRK56A is used in Ch. CTC5F, H and is electrically identical to UHF tuner #KRK36B covered in Photofact Folder 11 – Set 353.

COMPONENT CHANGES

C88 is decreased from 2200mmf to 1000mmf.

C89 is increased from .0018mfd to .0082mfd.

A 56mmf @ 500V ceramic disc capacitor is added from pin 8 of V11B (AGC Clamper-AF Amp.) to ground.

A 10K $\frac{1}{2}$ watt resistor is added between C90 and R103.

R102 is increased from 22K to 39K.

C91 is decreased from .022mfd to .0056mfd.

C93 is decreased from .0033mfd to .0027mfd.

C50 is increased from 8200Ω to 10K.

M16 (Printed Board-Picture less tubes) is changed to Part #103268.

M16 (Printed Board-Video less tubes) is changed to Part #102125A.

M16 (Printed Board-Vertical less tubes) is changed to Part #102120A.

M16 (Printed Board-Synchroguide less tubes) is changed to Part #102122A.

M16 (Printed Board-Chroma Plate less tubes) is changed to Part #102127A.

L18 (2nd. Video IF Coil) is changed to Part #103403.

R5A (Color Saturation) is changed to Part #103142.

T1 (Power Transformer) is changed to Part #102131A.

L55 (Horizontal Osc. Transformer) is changed to Part #103570. Replacement data for this part is given in the chart on the reverse side.

RCA VICTOR CHASSIS CTC 5, A, B, C, D, E, F, H

PRODUCTION CHANGES
BULLETIN 205

(Continued on Reverse Side)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

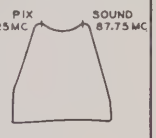
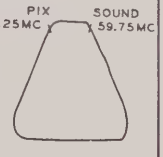
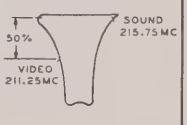
SET 395 FOLDER 4

TRANSFORMER (HORIZ. OSC.)

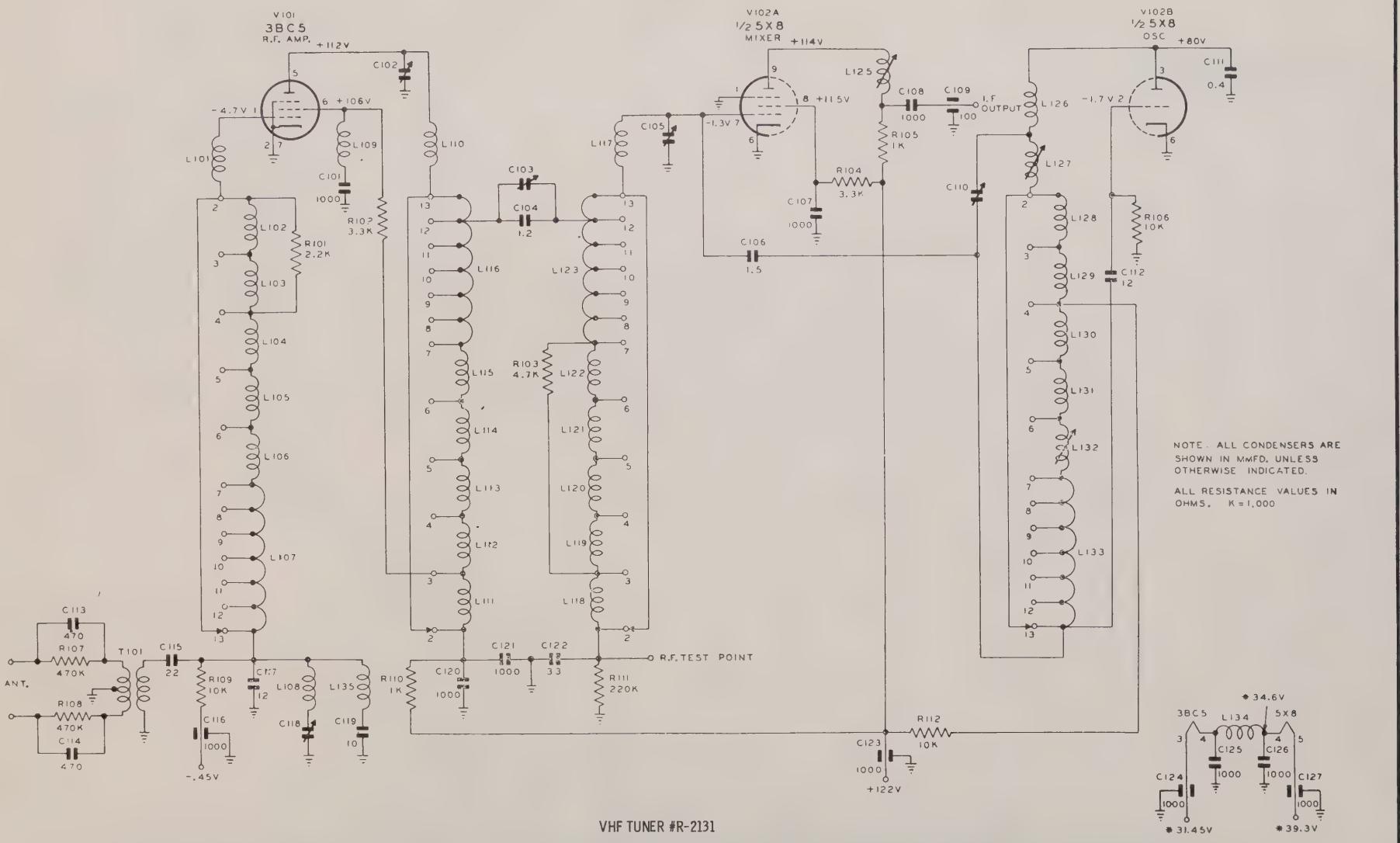
ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L55	65Ω*		103570		TV-165			HS-7	*Tap @ 45Ω.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 345	AIRLINE MODELS GRX-4019A, GRX-4023A, GRX-4025A, GSL-4019A, GSL-4023A
Airline Models GRX-4028A, GRX-4119A, GRX-4123A, GRX-4125A, GRX-4128A, GSL-4119A, GSL-4123A were covered in Photofact Folder 2 — Set 345. Models GRX-4019A, GRX-4023A, GRX-4025A, GSL-4019A, GSL-4023A are electrically identical to the models covered, except for the following changes.	
COMPONENT CHANGES L13 is omitted. A 10000mmf @ 500V ceramic disc capacitor is added from the junction of R65 and the 270V source to ground. NEW VHF TUNER VHF tuner #R-2131 is used in the models added above. A schematic showing the new tuner is given in this bulletin along with alignment instructions.	

TUNER ALIGNMENT

Step No.	Connect Marker Gen. To	Marker Gen. Freq. MC	Connect Sweep Gen. To	Sweep Generator Frequency	Connect Scope To	Adjust	Remarks	Response
1.	Loosely coupled to Ant. Terminals.	211.25 MC (pix carrier) 215.75 MC (sound carrier)	Antenna Terminals of Tuner.	Channel 13	R.F. test point through 10,000 ohm isolating resistor	Set tuner to Ch. 13 and adjust trimmer screws C102 (RF Plate) and C105 (Mixer Grid) for max. gain, flat top, symmetrical response. If an indentation is present in the RF response, detune the IF output adjustment (L125) slightly while aligning.	Disconnect AGC lead from terminal #1 (AGC) connect negative lead of 1.5 volt bias battery to terminal #1 and positive lead to chassis. Keep connected for steps 1 to 6. Disconnect Ant. leads from tuner.	
2.	Same as Step 1	175.25 MC (pix carrier) 179.75 MC (sound carrier)	Same as Step 1	Channel 7	Same as Step 1	Set tuner to Ch. 7. If response is unsymmetrical or tilted retune C102 and C105 for improved response. Check step 1, adjusting C102 and C105 for best compromise, if necessary.	Steps 1 and 2 may be repeated, as necessary, to obtain best Ch. 13, Ch. 7 compromise.	
3.	Same as Step 1	83.25 MC (pix carrier) 87.75 MC (sound carrier)	Same as Step 1	Channel 6	Same as Step 1	Set tuner to Ch. 6. If necessary to correct tilt or symmetry of response, remove cover and squeeze or spread Ch. 6 RF Coil (L115) and mixer coil (L122). Replace Cover.		
4.	Same as Step 1	55.25 MC (pix carrier) 59.75 MC (sound carrier)	Same as Step 1	Channel 2	Same as Step 1	Set tuner to Ch. 2. If absolutely necessary to correct response, remove cover and retouch Ch. 6 RF coil (L115) and mixer coil (L122). Check step 3 retouching L115 and L122 for best compromise. Replace cover. Retune IF output adjustment if detuned in step 1.	Steps 3 and 4 may be repeated as necessary to obtain best Ch. 6, Ch. 2 compromise.	
5.	Same as Step 1	Same as Step 1	Same as Step 1	Channel 13	Video detector load resistor R7 through 10,000 ohm isolating resistor.	Set tuner to Ch. 13 and tune Ch. 13 Osc. adjustment screw (L127) to correctly position markers on response curve.	Flat on fine tuning shaft should be parallel with top of tuner chassis. (Mid position)	
6.	Same as Step 1	Same as Step 3	Same as Step 1	Channel 6	Same as Step 5	Set tuner to Ch. 6, and tune Ch. 6 Osc. adjustment screw (L132) to correctly position markers on response curve.	Same as Step 5.	Same Marker positions as Step 5
7.	Remove Marker		Remove Sweep		Remove Scope	If 41 MC. IF interference is present tune 41 MC trap adjustment (C118) for best picture.	Disconnect Bias Battery from terminal #1 reconnect AGC lead, reconnect Antenna lead.	

(Continued on Reverse Side)



VHF TUNER #R-2131

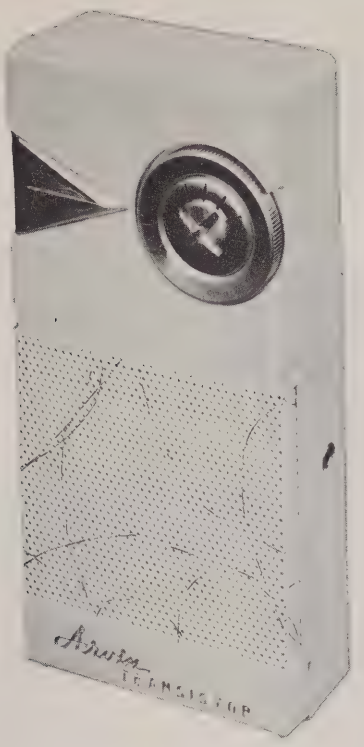
SCHEMATIC COURTESY OF MONTGOMERY WARD & COMPANY

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ARVIN MODEL 8576 (Ch. 1.41400)

ARVIN MODEL
8576 (Ch. 1.41400)



TRADE NAME	Arvin Model 8576 (Ch. 1.41400)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC
RATING	15MA @ 9 Volts DC
TUNING RANGE—BROADCAST	540 - 1670KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5mfd	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 & 3.

ARVIN MODEL
8576 (Ch. 1.41400)

SET 395 FOLDER 5

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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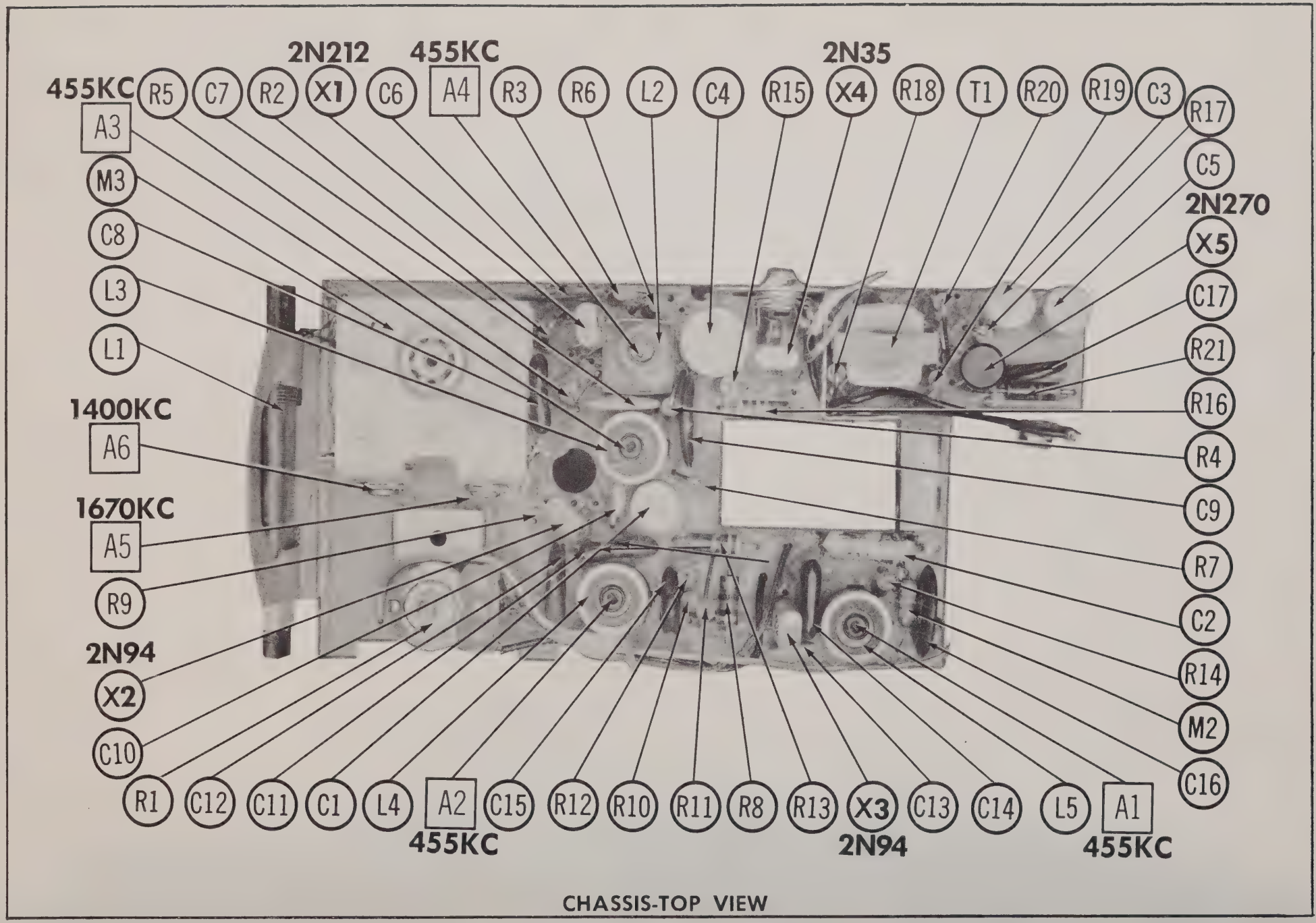


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N212	Converter	2N439		2N212/2N194	
X2	2N94	1st IF Amplifier	2N438		2N94	
X3	2N94	2nd IF Amplifier	2N438		2N94	
X4	2N35	AF Amplifier	2N439		2N35	
X5	2N270	Output	2N180	2N360	2N231/2N241A	Note 1

Note 1. Alternate types 2N321 or 2N241A.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	10	10	44279-6	PWE10010	NL10-10	TT15X10	ML10-15		TE-1114
C2	4	10	44396-1	XPP10004	NL5-15	TT12X5	ML4-15		TE-1127
C3	10	10	44279-6	PWE10010	NL10-10	TT15X10	ML10-15		TE-1114
C4A	80	10	44397-2						R2514 *
B	80	10							
C5	80	10	44279-7		NL100-10				R2515 *

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	50000			BPD-05					TG-S50	
C7	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	TG-S10	
C8	680			1464-00068	D6-681	1R5T68	ED-680		MS-368	10%
C9	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C10	10			NPO-DI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	10% NPO ①
C11	470			1464-00047	D6-471	5R5T47	ED-470		MS-347	10%
C12A	20000			BPD-2X02					5HK-2S2	
B	20000									
C13	27				TCZ-27	C10Q27C	TCO-27			NPO 10%
C14	680			1464-00068	D6-681	1R5T68	ED-680		MS-368	10%
C15A	20000			BPD-2X02					5HK-2S2	
B	20000									
C16	50000			BPD-05					TG-S50	
C17	100000								TG-P10	

① Some versions use 16mmf in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2200Ω	1/4	45000-2					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R2	3900Ω 5%			Note 1
R3	43K 5%			
R4	8200Ω			
R5	22Ω			
R6	1500Ω			
R7	47K 5%			
R8	1000Ω			
R9	820Ω 5%			
R10	2200Ω			
R11	39K			

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R12	1000Ω			Note 2
R13	3300Ω 5%			
R14	220Ω			
R15	4700Ω			
R16	47K			
R17	4700Ω			
R18	470Ω			
R19	2200Ω			
R20	12K			
R21	100Ω 5%			

Note 1. Some versions use 68K in this application.
Note 2. Some versions use 3300Ω in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	612Ω	17Ω	44858	GH-105			TR-20		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	2 3/4"	PM	17Ω	44280		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ARVIN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	44511-2					
L2	Osc. Coil	44383-3					
L3	1st IF	44855-1					
L4	2nd IF	44855-2					
L5	3rd IF	44855-3					

BATTERIES

ITEM No.	VOLTAGE	ARVIN PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			P6		226		M-1600		1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ARVIN PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N295 ①		1N60	1N60	AM Detector (Pigtail)

① Some versions may use type 1N64G

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M3	Tuning Capacitor	44730	2 Gang (Ant. 33-135mmf, Osc. 35-95mmf)

CABINETS & CABINET PARTS

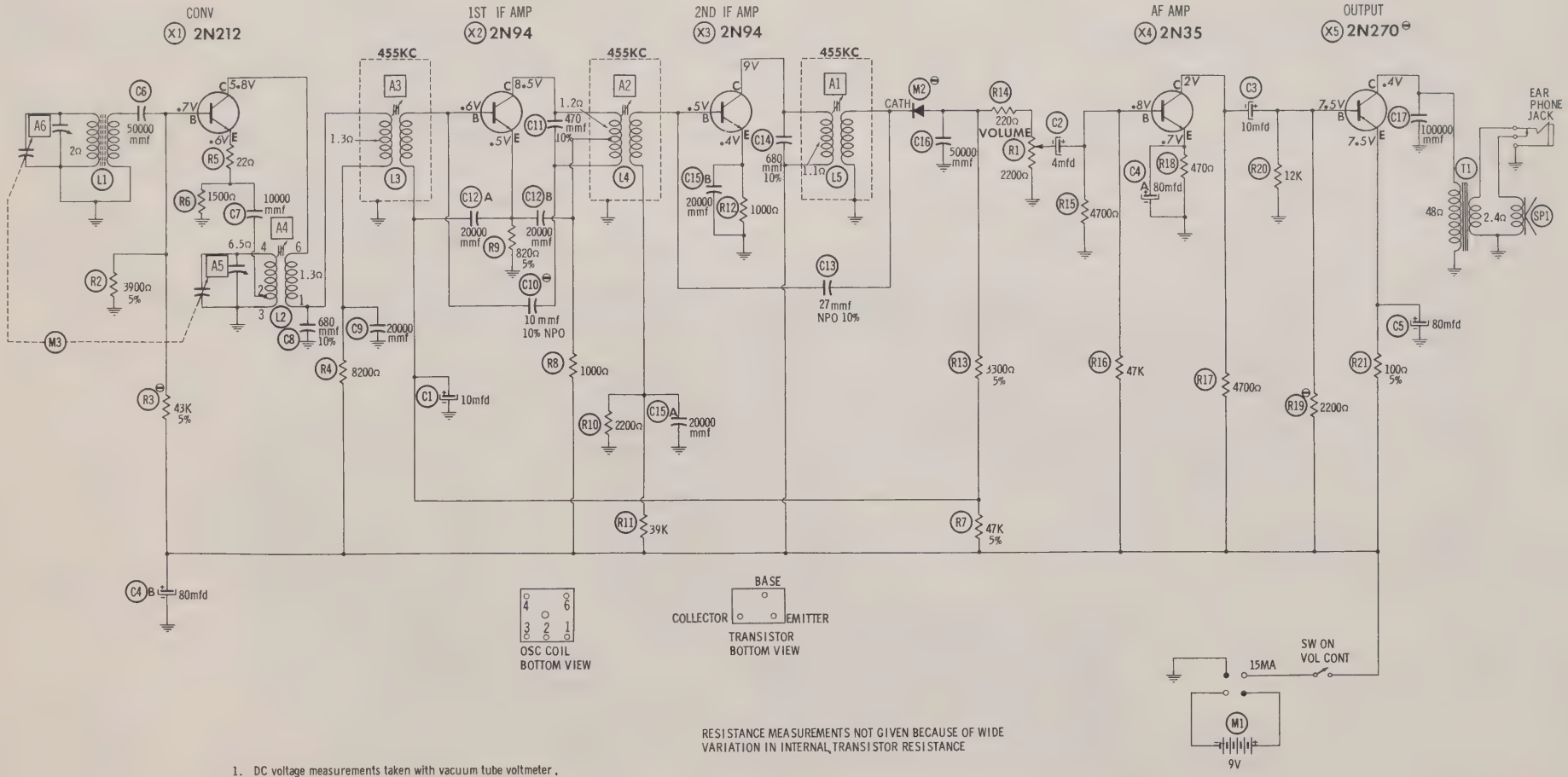
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	44728-29	On-Off-Volume, Ebony
Knob	44728-35	On-Off-Volume, Turquoise
Knob	44729	Tuning
Cabinet	44559-29	Ebony
Cabinet	44559-35	Turquoise

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

SET 365 FOLDER 5
FOLDER 5
ARVIN MODEL 8576 (Ch. 1 41400)
ARVIN MODEL 8576 (Ch. 1 41400)



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

BELL SOUND MODEL 2325

BELL SOUND MODEL 2325

BELL SOUND MODEL 2325

TRADE NAME	Bell Sound Model 2325
MANUFACTURER	Bell Sound Systems, Inc., 555 Marion Road, Columbus 7, Ohio
TYPE SET	AC Operated 6 Channel 20 Watt Audio Amplifier
TUBES (Seven)	Types 12AX7/ECC83 Phono Preamp., 12AV6 Cath. Follower, 12AX7/ECC83 AF Amplifier, 12AX7/ECC83 Driver, (2) 6L6GB Output, 5U4GB Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING 1.1 Amp. @ 117 Volts AC (125 Watts)

BIAS ADJUSTMENT (R7, R8)

If either V5 or V6 is replaced, the bias should be readjusted. An accurate 0-1V DC voltmeter should be used. Measure the voltages across R61 and R65. (Jacks for standard phono type plugs are provided). If the meter readings are not..56V, alternately adjust R7 and R8 until both readings are .56V. Equal voltages not exceeding .58V are satisfactory. Additional tube substitution of V5 or V6 may be necessary.

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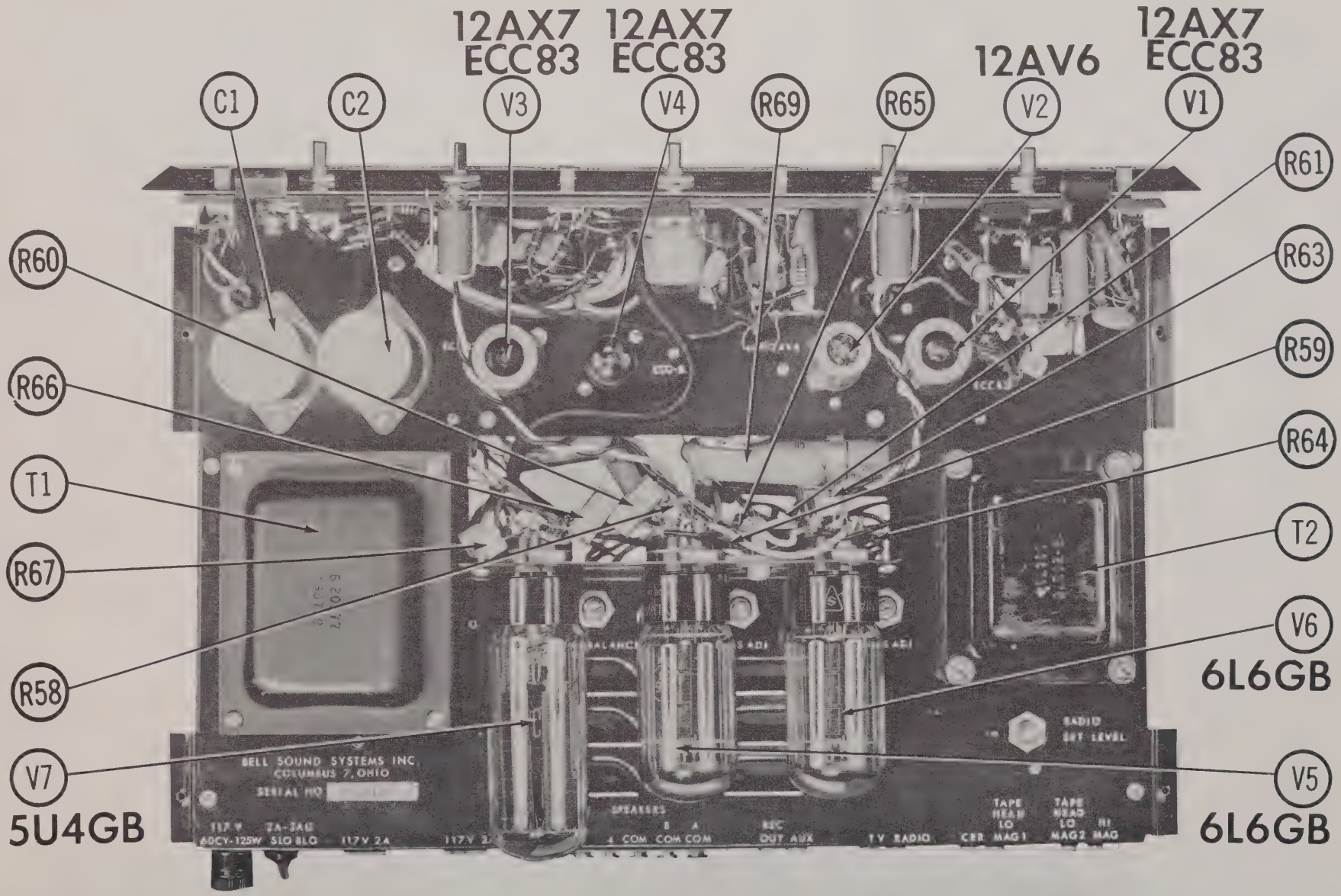
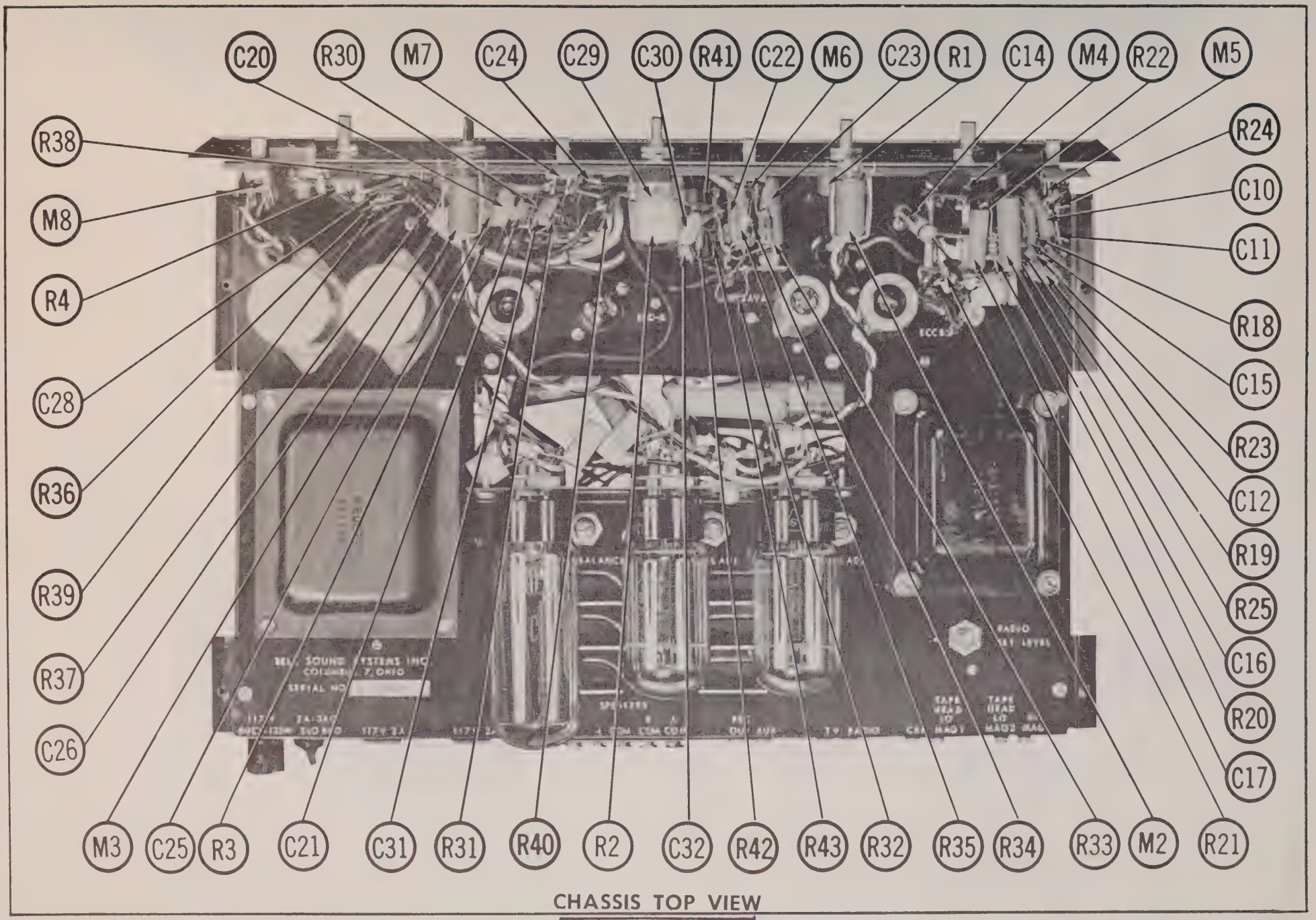
H368

SET 395 FOLDER 6



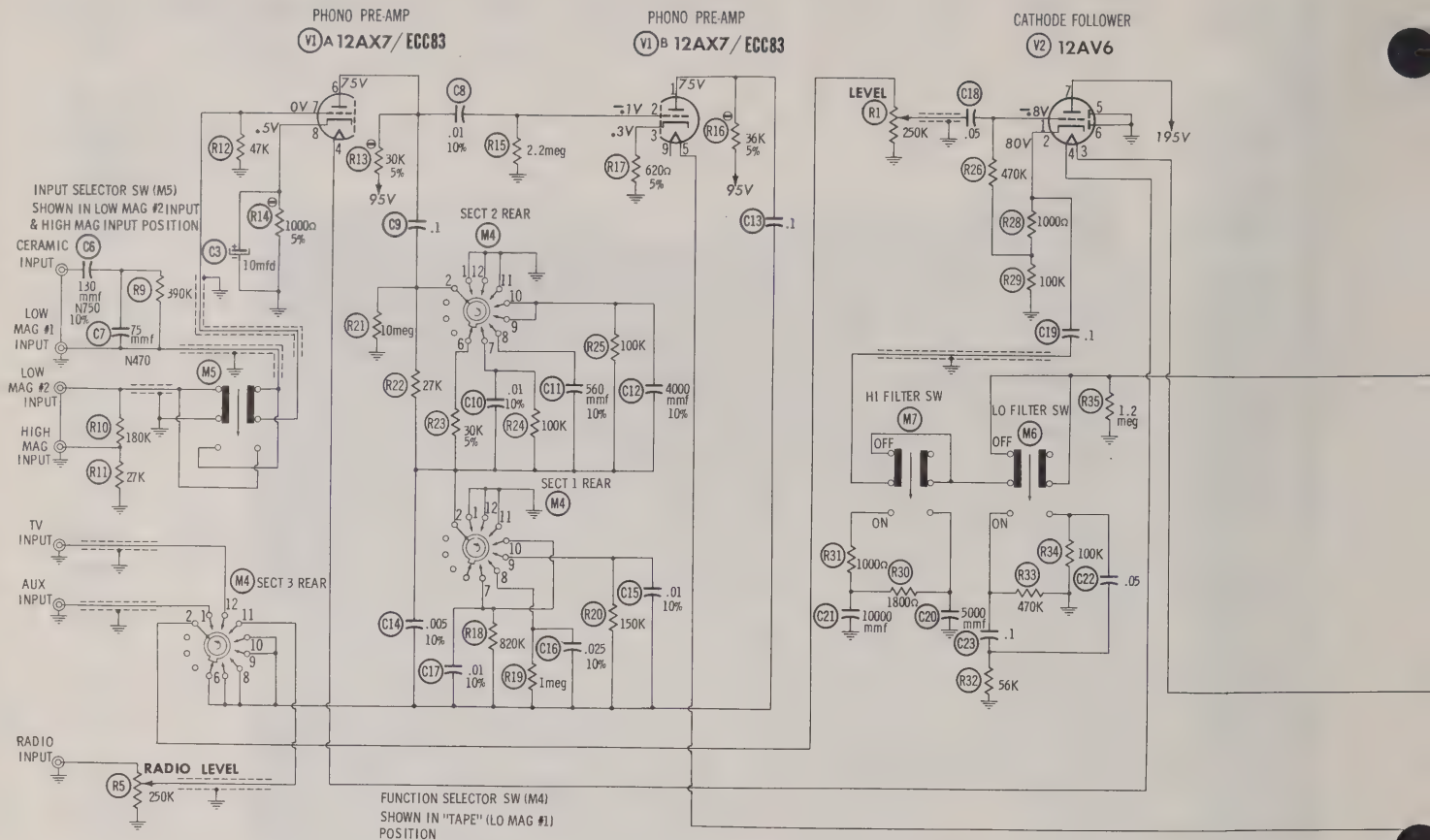
CHASSIS-TOP VIEW



CHASSIS TOP VIEW

BELL SOUND
MODEL 2325

FOLDER 6



RESISTANCE READINGS

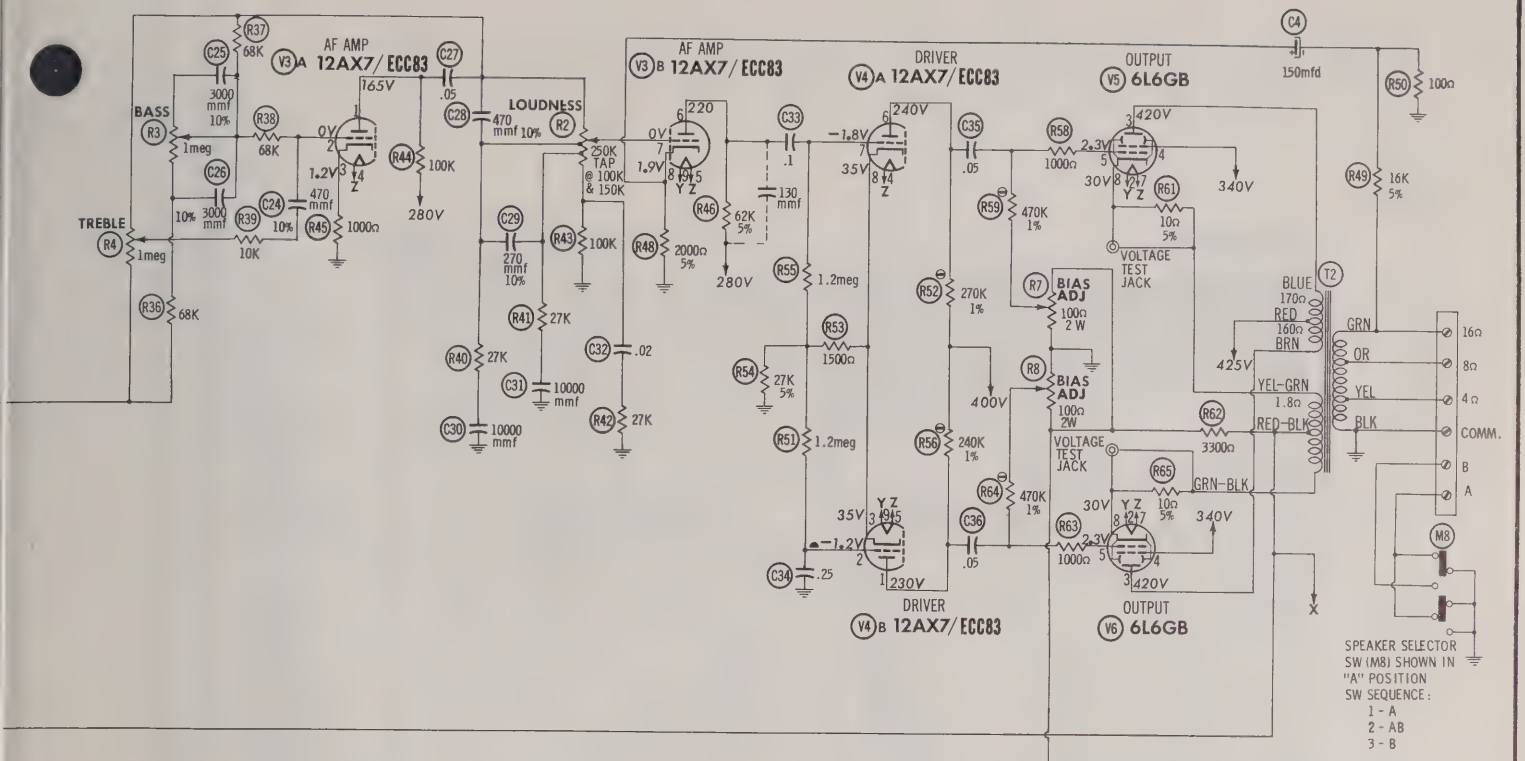
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7/ ECC83	†250K	2.2meg	620Ω	62Ω	50Ω	†45K	47K	1000Ω	53Ω
V2	12AV6	570K	100K	74Ω	62Ω	0Ω	0Ω	†85K		
V3	12AX7/ ECC83	†135K	400K	1000Ω	85Ω	85Ω	†100K	100K	2000Ω	85Ω
V4	12AX7/ ECC83	†275K	1.2meg	28K	85Ω	85Ω	†245K	1.2meg	28K	85Ω
V5	6L6GB	TP	85Ω	†270Ω	†2100Ω	470K	TP	85Ω	105Ω	
V6	6L6GB	NC	85Ω	†268Ω	†2100Ω	470K	TP	85Ω	105Ω	
V7	5U4GB	NC	20K(MIN)	TP	69Ω	TP	62Ω	NC	20K(MIN)	

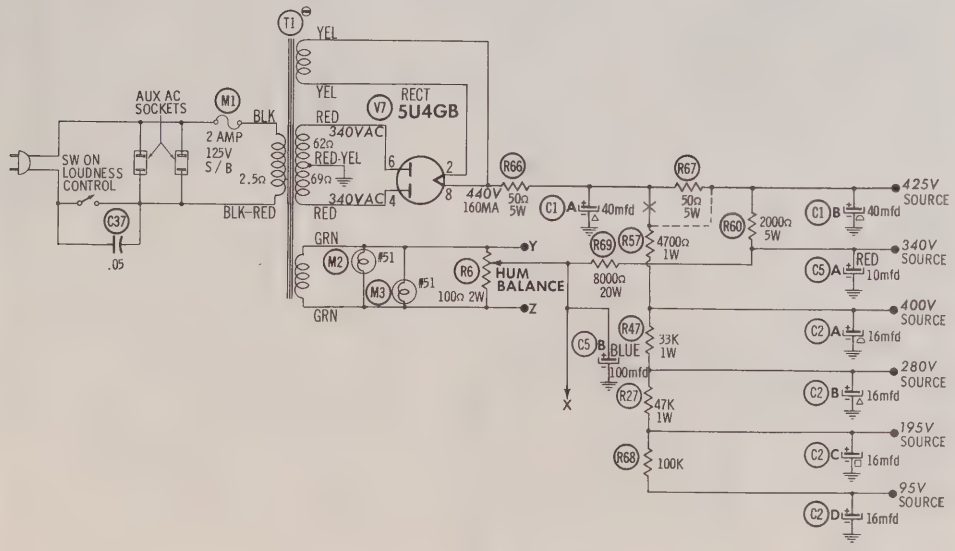
† MEASURED FROM PIN 8 OF V7.
■ MEASURED FROM PIN 2 OF V2.
▪ MEASURED FROM PIN 3 OF V4.
♦ MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION
TP TIE POINT

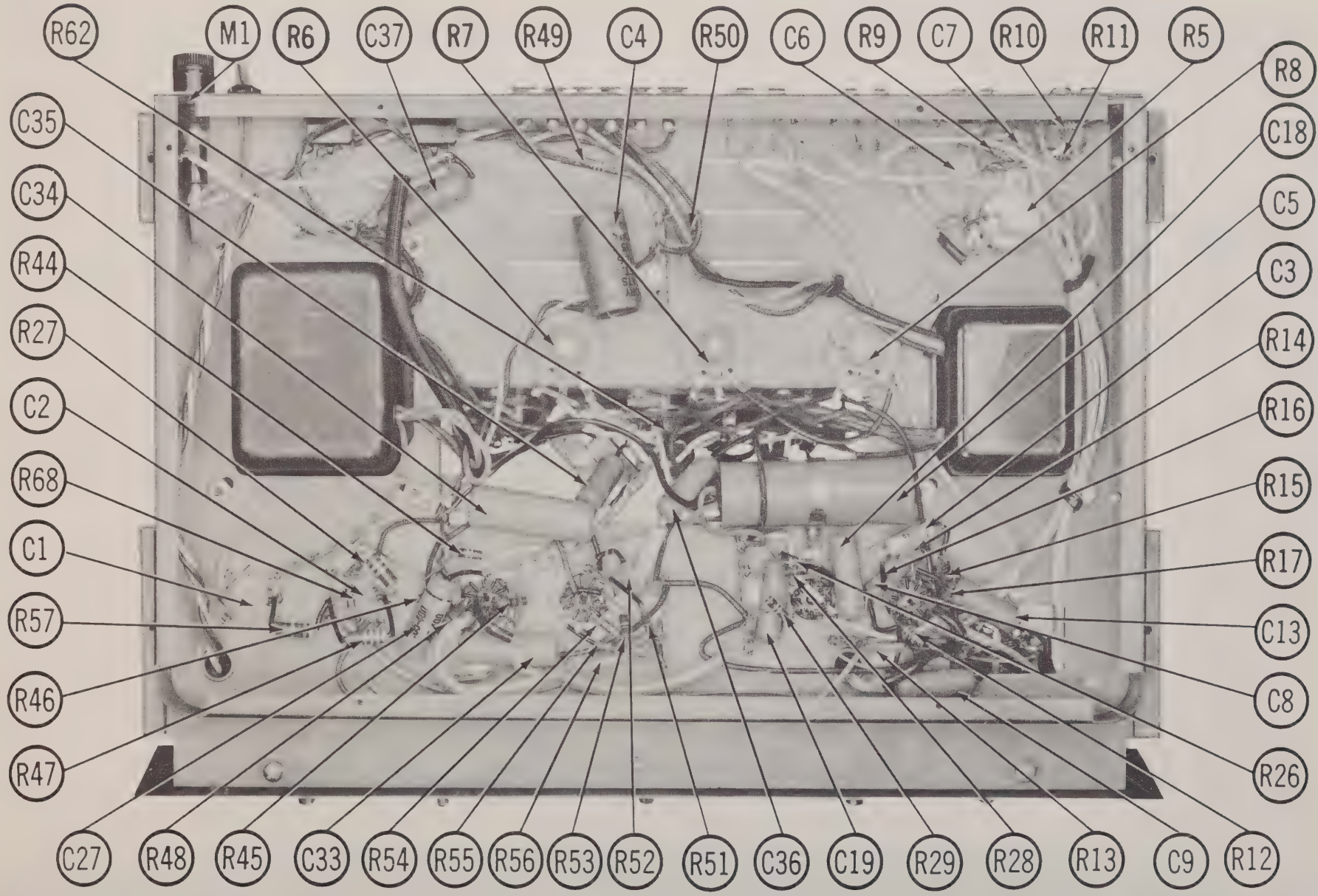
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958


AF AMP
V3A 12AX7/ECC83
AF AMP
V3B 12AX7/ECC83
DRIVER
V4A 12AX7/ECC83
OUTPUT
V5 6L6GB
DRIVER
V4B 12AX7/ECC83
OUTPUT
V6 6L6GB
BASS
TREBLE
LOUDNESS
VOLTAGE TEST JACK
BIAS ADJ
SPEAKER SELECTOR SW (M8) SHOWN IN "A" POSITION
SW SEQUENCE:
1 - A
2 - AB
3 - B
16Ω
8Ω
4Ω
COMM.
B
A


AUX AC SOCKETS
SW ON LOUDNESS CONTROL
2 AMP 125V S/B
RECT
5U4GB
340VAC
HUM BALANCE
425V SOURCE
340V SOURCE
400V SOURCE
280V SOURCE
195V SOURCE
95V SOURCE



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Phono Preamplifier	12AX7/ECC83
V2	Cath. Follower	12AV6
V3	AF Amplifier	12AX7/ECC83
V4	Driver	12AX7/ECC83

ITEM No.	USE	TYPE
V5	Output	6L6GB
V6	Output	6L6GB
V7	Rectifier	5U4GB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	B20048P34	AFH3-140-50	C0270	FP376.5	TMQ-12	T-140	*R2575
B	▬40	450			BR2045	TC75		MT-4520	
C2A	▬16	450	23B2	AFH4-19-10	C0270	FP376.5	TMQ-12	T-140	*R2576
B	▲16	450			BR2045	TC75		MT-4520	
C	■16	450							
D	16	450							
C3	10	10	B20053P164	PWE10010	NL10-10	TT12X10	ML10-15		TE-1163
C4	150	15	B20053P14	PRS50V150	BR1505	TC495	TD-150-50	MTH-1510	TVA-1311
C5A	10	450	23B3	PR4-200	B0670	WT700		T-810	*R2577
B	100	50							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	130				TCN-130	C10T13U	TC7-130			N750 10%
C7	75									N470
C8	.01	400						GEM-1611		10%
C9	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C10	.01	400						GEM-1611		10%
C11	560				D6-561	1R5T56	ED-560		MS-356	10%
C12	4000					1R5D4		MCB463	MS-24	10%
C13	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C14	.005	400						GEM-1625		10%
C15	.01	400						GEM-1611		10%
C16	.025	400								10%
C17	.01	400						GEM-1611		10%
C18	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C19	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C20	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C21	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C22	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C23	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C24	470				D6-471	5R5T47	ED-470		MS-347	10%
C25	3000					1R5D3	CY20C302J	MCB461	MS-23	10%
C26	3000					1R5D3	CY20C302J	MCB461	MS-23	10%
C27	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C28	470				D6-471	5R5T47	ED-470		MS-347	10%
C29	270				D6-271	5R5T27	ED-270		MS-327	10%
C30	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C31	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C32	.02	400		P488N-02	DD-203	CUB4S2	ED-02	GEM-412	4TM-S2	
C33	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C34	.25	200		P288N-25		CUB2P25		GEM-2025	2TM-P25	
C35	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C36	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C37	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	½	B20066P162	B-50	A47-250K-S	Q11-130	U46	Level
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	250K	½	B20066P164					Loudness - Tap @ 100K & 150K
B	Switch							
R3A	1meg	½	15B1	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	1meg	½	15B1	B-69	A47-1meg-S	Q11-137	U54	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	250K	½	B20066P128	AB-51	A47-250K-Z	Q13-130	U41	Radio Set Level
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	
R6A	100Ω	2	B20066P141	WN-101	A43-100	WPK100	R100L	Hum Balance- Wire wound
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R7A	100Ω	2	B20066P141	WN-101	A43-100	WPK100	R100L	Bias Adj.-Wire wound
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R8A	100Ω	2	B20066P141	WN-101	A43-100	WPK100	R100L	Bias Adj. -Wire wound
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		BELL SOUND PART No.	NOTES
	OHMS	WATT		
R9	390K			
R10	180K			
R11	27K			
R12	47K			
R13	30K 5%			Note 1
R14	1000Ω 5%			Note 1
R15	2.2meg			
R16	36K 5%			Note 1
R17	620Ω 5%			
R18	820K			
R19	1meg			
R20	150K			
R21	10meg			
R22	27K			
R23	30K 5%			
R24	100K			
R25	100K			
R26	470K			
R27	47K	1		
R28	1000Ω			
R29	100K			
R30	1800Ω			
R31	1000Ω			
R32	56K			
R33	470K			
R34	100K			
R35	1.2meg			
R36	68K			
R37	68K			
R38	68K			
R39	10K			

ITEM No.	RATING		BELL SOUND PART No.	NOTES
	OHMS	WATT		
R40	27K			
R41	27K			
R42	27K			
R43	100K			
R44	100K			
R45	1000Ω			
R46	62K 5%			
R47	33K	1		
R48	2000Ω 5%			
R49	16K 5%			
R50	100Ω			
R51	1.2meg			
R52	270K 1%			Note 1
R53	1500Ω			
R54	27K 5%			
R55	1.2meg			
R56	240K 1%			Note 1
R57	4700Ω	1		
R58	1000Ω			
R59	470K 1%			
R60	2000Ω	5		Note 1
R61	10Ω 5%			
R62	3300Ω			
R63	1000Ω			
R64	470K 1%			Note 1
R65	10Ω 5%			
R66	50Ω	5		
R67	50Ω	5		
R68	100K			
R69	8000Ω	20		

Note 1. Low noise deposited carbon type resistor.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.1A	800VCT @ .160A	5V @ 3A	B-20377 ①						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.7A									

① Part #B20378 used for 50-60 cycles.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4500Ω CT	16Ω tap @ 8Ω, 4Ω	B-20376 ①							① Alternate part #B-20339
	Turns Ratio									
	Pri. 2	Sec. 2								
	9.5:1									

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BELL SOUND PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 125V S/B	B20043P30		313002. (3AG-2A-125V-S/B)	342001	MDL 2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M2	Pilot Lamp	B20044P2	#51
M3	Pilot Lamp	B20044P2	#51
M4	Switch	43B2	Selector (Rotary, wafer type)
M5	Switch	B20219P4	Input Selector (Slide type, DPDT)
M6	Switch	B20219P4	Lo Filter (Slide type, DPDT)
M7	Switch	B20219P4	Hi Filter (Slide type, DPDT)
M8	Switch	B20219P6	Speaker Selector (Slide type, DP 3 Position)

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	26A0380P1	White
Knob	26A0380P2	Brown

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CHALLENGER MODEL CHA75

CHALLENGER MODEL
CHA75

TRADE NAME	Challenger Model CHA75
MANUFACTURER	Challenger Amplifier Co., P.O. Box 500, Paramus, N.J.
TYPE SET	AC Operated 3 Channel 75 Watt Audio Amplifier
TUBES (Eleven)	Types 12AX7/ECC83 Mic Preamplifier, 6AU6 AF Amplifier, 6U8 AF Amp.-Phase Inv., (4) 6AV5GA Output, 6CM7 Volt. Reg.-Volt Cont., (3) 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.1 Amp. @ 117 Volts AC (125 Watts)

CHALLENGER MODEL
CHA75

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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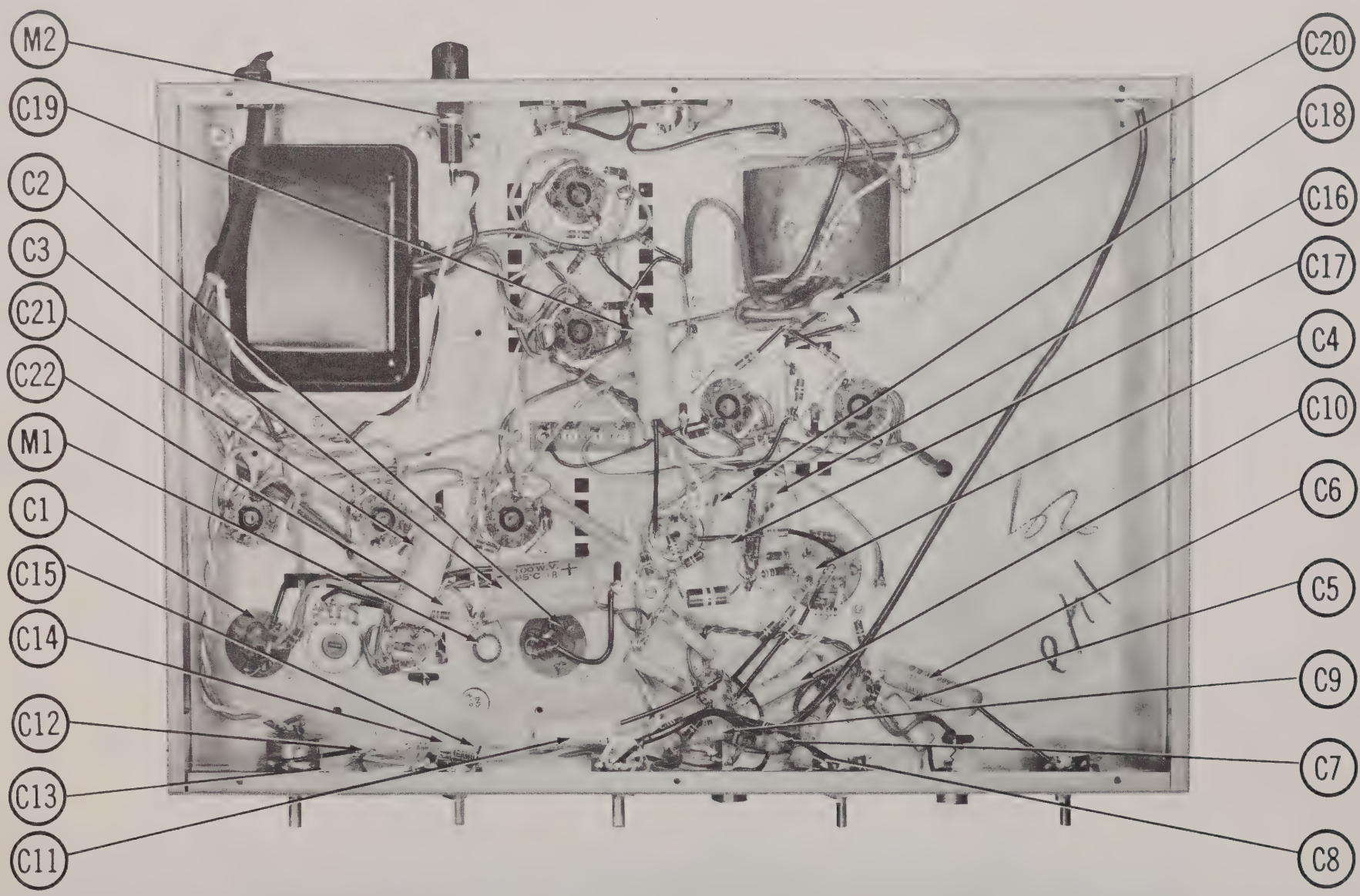
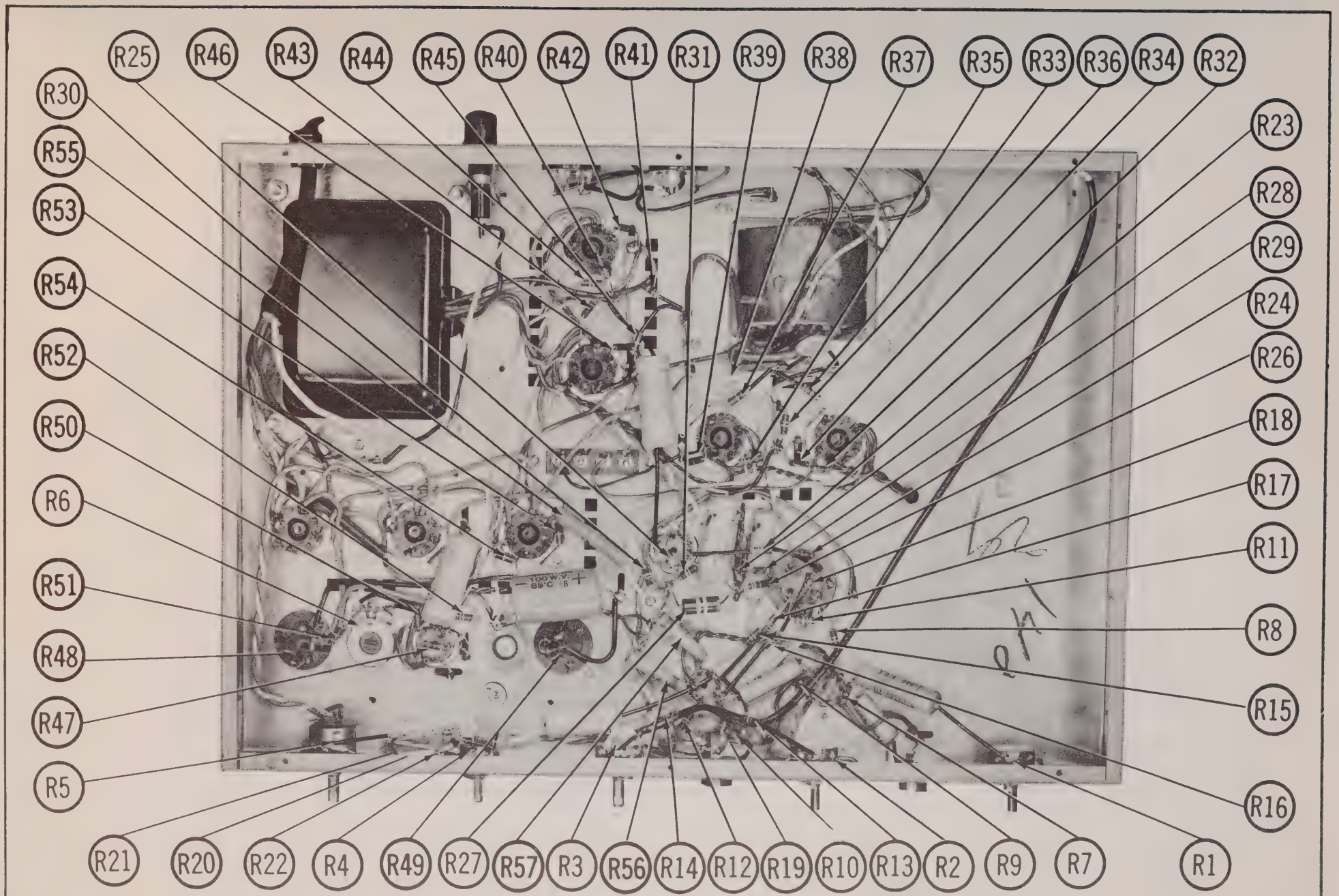
H362

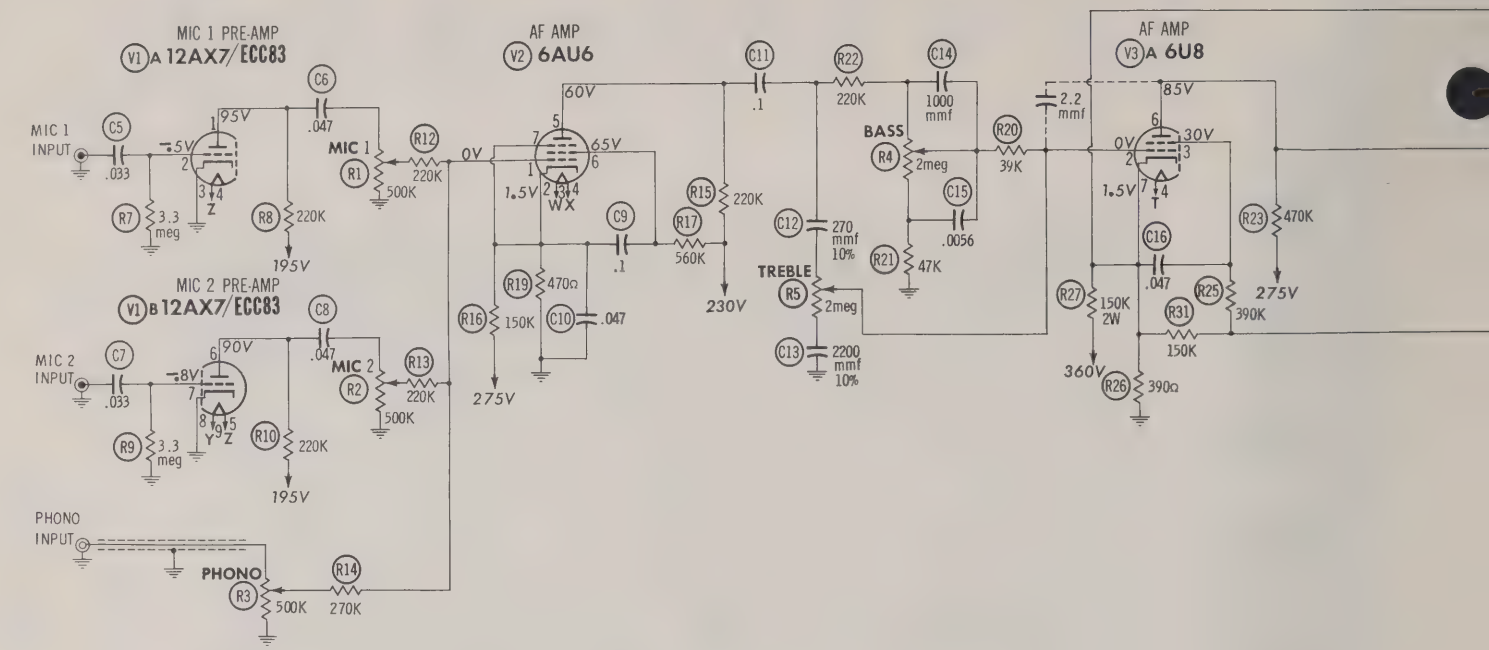
SET 395 FOLDER 7

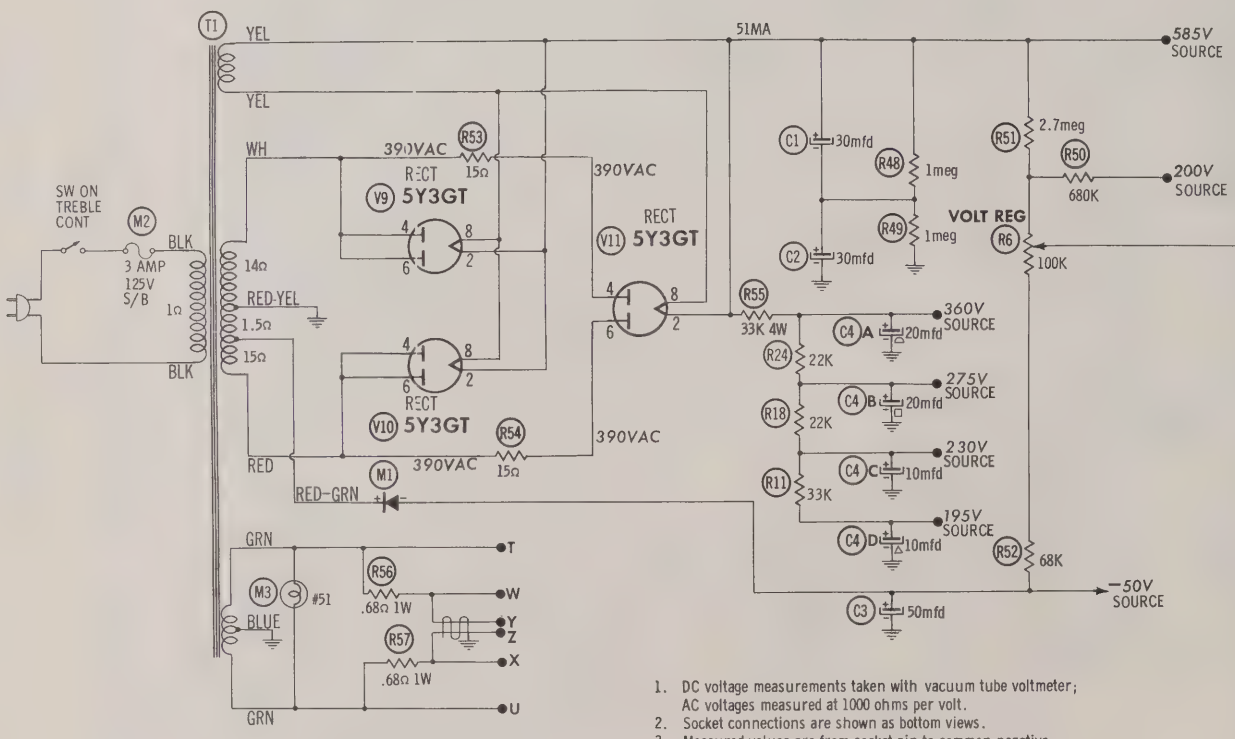


CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION





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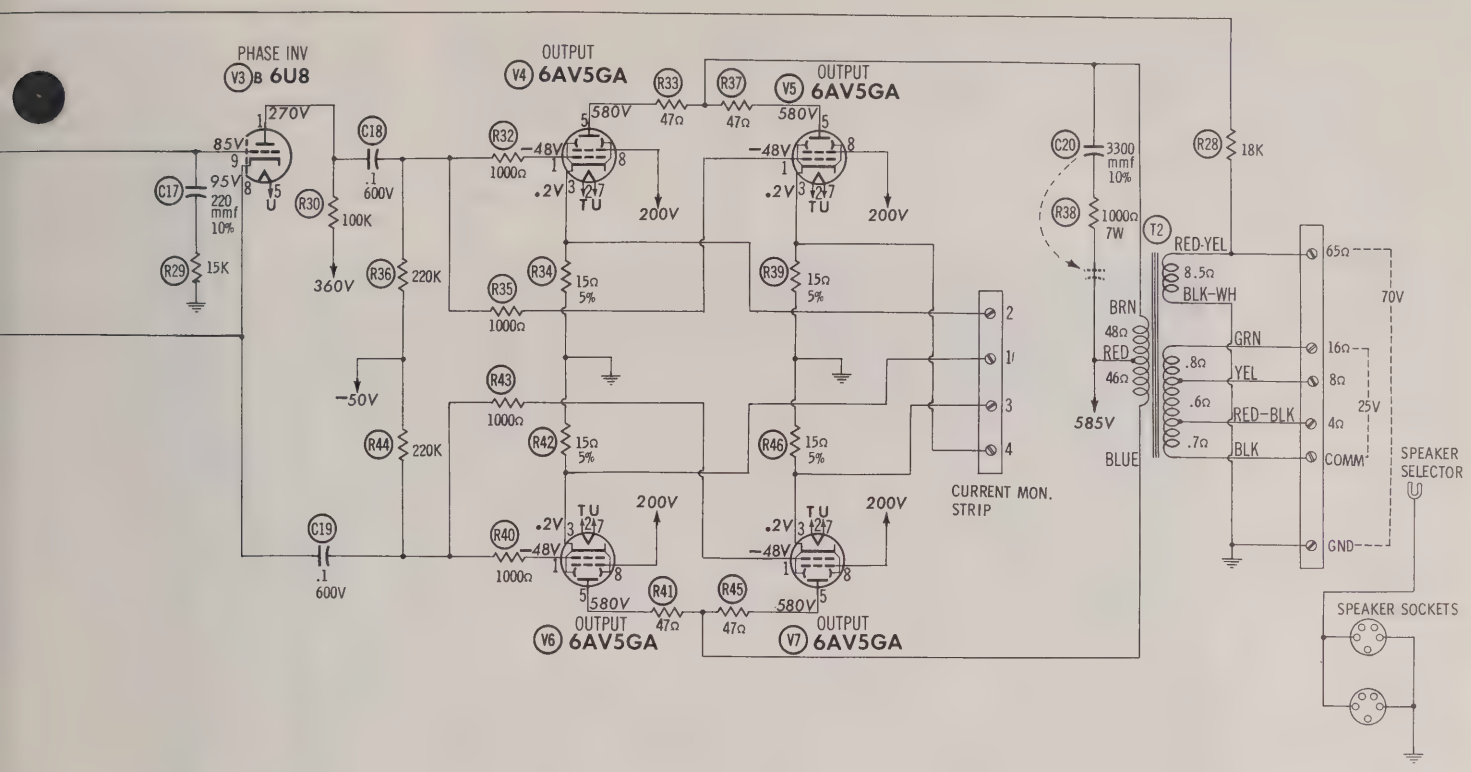
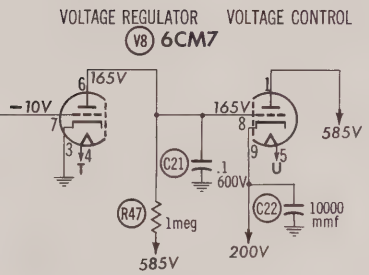
Howard W. Sams & Co., Inc. 1958

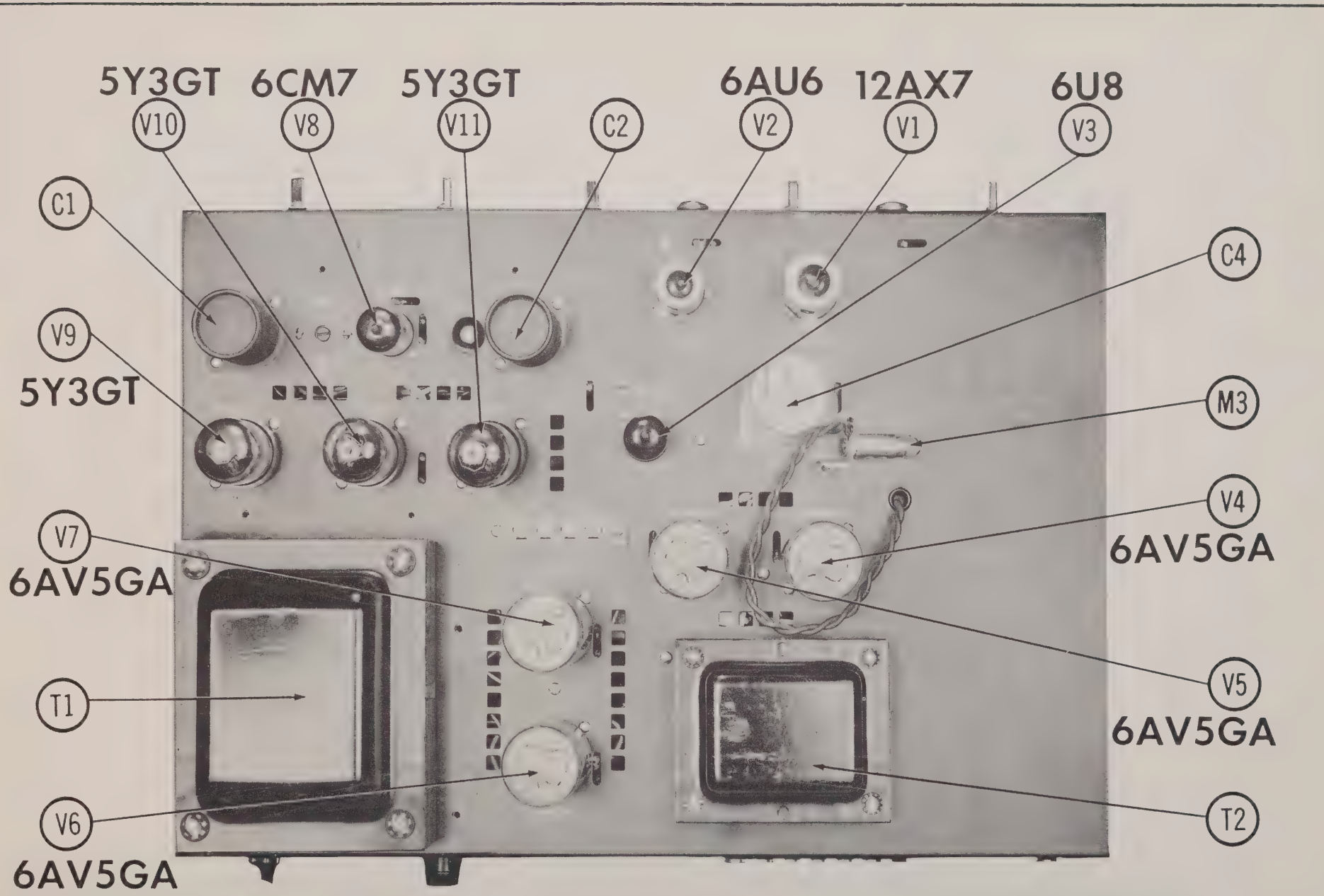




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	†330K	3.3meg	0Ω	.6Ω	.6Ω	†330K	3.3meg	0Ω	.6Ω
V2	6AU6	90K	470Ω	.6Ω	.6Ω	†300K	†630K	470Ω		
V3	6U8	†130K	85K	†630K	.1Ω	.1Ω	†520K	390Ω	150K	†520K
V4	6AV5GA	▲ 220K	.1Ω	15Ω	NC	†103Ω	NC	.1Ω	†1meg	
V5	6AV5GA	▲ 220K	.1Ω	15Ω	NC	†103Ω	NC	.1Ω	†1meg	
V6	6AV5GA	▲ 220K	.1Ω	15Ω	NC	†105Ω	NC	.1Ω	†1meg	
V7	6AV5GA	▲ 220K	.1Ω	15Ω	NC	†105Ω	NC	.1Ω	†1meg	
V8	6CM7	†0Ω	NC	0Ω	.1Ω	.1Ω	†1meg	▲ 80K	†1meg	▲ 820K
V9	5Y3GT	NC	20K (MIN)	NC	14Ω	NC	14Ω	NC	20K(MIN)	
V10	5Y3GT	NC	20K (MIN)	NC	16.5Ω	NC	16.5Ω	NC	20K(MIN)	
V11	5Y3GT	NC	20K (MIN)	TP	31.5Ω	NC	29Ω	TP	20K (MIN)	

† MEASURED FROM PIN 2 OF V11.
▲ MEASURED FROM NEGATIVE TERMINAL OF M1.
NC NO CONNECTION.
TP TIE POINT.



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1A	Mic 1 Preamplifier-	12AX7/ECC83
B	Mic 2 Preamplifier	
V2	AF Amplifier	6AU6
V3	AF Amp. -Phase Inv.	6U8
V4	Output	6AV5GA
V5	Output	6AV5GA

ITEM No.	USE	TYPE
V6	Output	6AV5GA
V7	Output	6AV5GA
V8	Volt. Reg. -Volt Cont.	6CM7
V9	Rectifier	5Y3GT
V10	Rectifier	5Y3GT
V11	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Challenger PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	30	400		AFH1-51	A0470	FP145	TMS-56	S-265	TVL-1720
C2	30	400		AFH1-51	A0470	FP145	TMS-56	S-265	TVL-1720
C3	50	100		PRS150V50	BR5015	TC49	TD-50-150	MT-1550	TVA-1414
C4A	▲20	450		AFH4-19-10	D0179.3	FP474.5	TMQ-113	Q-035	TVL-4826
B	■20	450						MT-4510	
C	10	350							
D	▲10	350							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Challenger PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C6	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C7	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	
C8	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C9	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C10	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C11	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C12	270				D6-271	L10T27	ED-270		MS-327	10%
C13	2200					1R5D22	CY20C222K		MS-222	10%
C14	1000			BPD-001	DD-103	BYA6D1	ED-1000	DC521	5HK-D1	
C15	.0056	200			D6-562	CUB6D56	GP-5600			
C16	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C17	220				D6-221	L10T22	ED-220		MS-322	10%
C18	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C19	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C20	3300					1R5D33	CY20C332K		MS-233	10%
C21	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C22	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Challenger PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Mic 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Mic 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Phono
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	2meg	½	V413	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	2meg	½	V417	B-76	A47-2meg-Z	Q13-139	U55	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1*	SWE-12	76-1	US-26	
R6A	100K	½	V392A	AB-40	A47-100K-S	B11-128	TA15L	Volt. Reg.
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	

* Use KR-1 switch on red label control only.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Challenger PART No.	NOTES
	OHMS	WATT		
R7	3.3meg			
R8	220K			
R9	3.3meg			
R10	220K			
R11	33K			
R12	220K			
R13	220K			
R14	270K			
R15	220K			
R16	150K			
R17	560K			
R18	22K			
R19	470Ω			
R20	39K			
R21	47K			
R22	220K			
R23	470K			
R24	22K			
R25	390K			
R26	390Ω			
R27	150K	2		
R28	18K			
R29	15K			
R30	100K			
R31	150K			
R32	1000Ω			

ITEM No.	RATING		Challenger PART No.	NOTES
	OHMS	WATT		
R33	47Ω			
R34	15Ω 5%			
R35	1000Ω			
R36	220K			
R37	47Ω			
R38	1000Ω	7		
R39	15Ω 5%			
R40	1000Ω			
R41	47Ω			
R42	15Ω 5%			
R43	1000Ω			
R44	220K			
R45	47Ω			
R46	15Ω 5%			
R47	1meg			
R48	1meg			
R49	1meg			
R50	680K			
R51	2.7meg			
R52	68K-			
R53	15Ω			
R54	15Ω			
R55	33K	4		
R56	.68Ω	1		
R57	.68Ω	1		

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Challenger PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @1.1A	870VCT @.052A Tap @ 37V @ .001A	5V @ 6A	T3150						
	SEC. 3									
	6.3VCT @ 7A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Challenger PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3300Ω CT	65Ω	72124-1							
		SEC. 2 16Ω tap @ 8Ω,4Ω								

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Challenger PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.001A	H373	1263A	RS065Q	10	

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Challenger PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	3A 125V S/B			313003. (3AG-3A-125V-S/B)	342001	MDX 3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Challenger PART No.	NOTES
M3	Pilot Lamp		#51

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

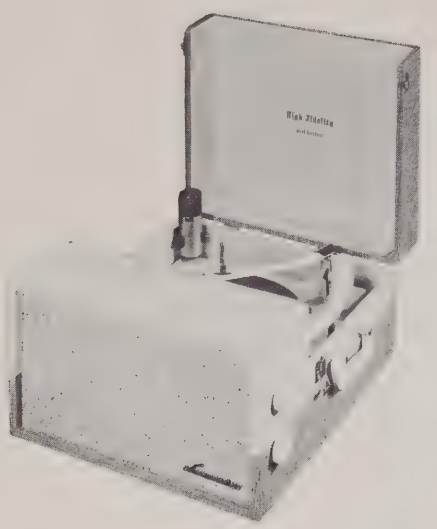
VOLTAGE REGULATOR CONTROL ADJUSTMENT (R6)

The voltage regulator control (R6) should be adjusted if V4, V5, V6, V7 or V8 is replaced.
1. Turn the "Volt. Reg." control (R6) and all volume controls (R1, R2, R3) to MINIMUM.
2. Allow the amplifier to warm up for 4 minutes.
3. Connect the negative lead of a low range DC voltmeter to chassis. Connect the positive lead to terminal 1 on the "CUR MON" strip.
4. Turn the "Volt. Reg." control (R6) until the meter needle has a SLIGHT deflection. Measure the voltage at each terminal of the "CUR MON" strip. Keep the meter connected to that terminal which indicates the highest voltage.
5. Turn the "Volt. Reg." control (R6) until the meter indicates .25 volts.

PHOTOFACT* Folder
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

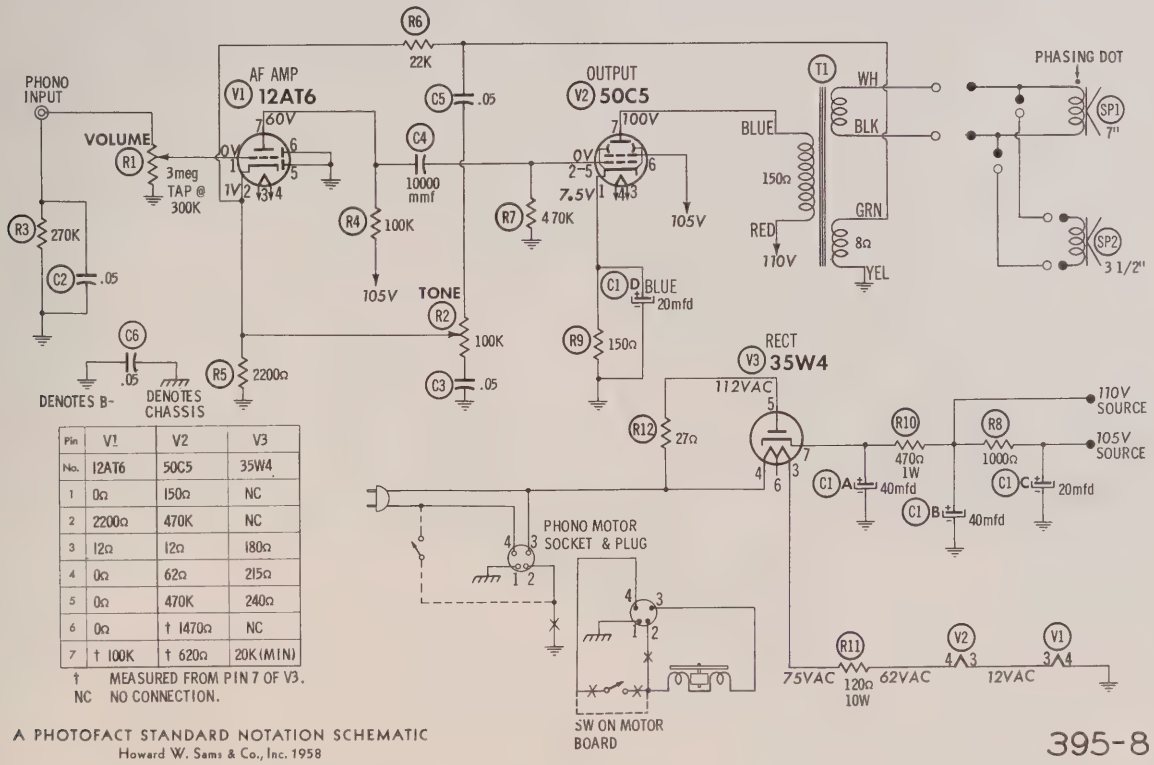
CORONADO MODEL PH7-4095A

CORONADO MODEL
PH7-4095A



TRADE NAME	Coronado Model PH7-4095A
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th. St., Minneapolis, Minn.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AT6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .25 Amp. @ 117 Volts AC (25 Watts Without Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M MODEL 1200A - PHOTOFACT SET 353 - FOLDER 16.



Pin No.	V1 12AT6	V2 50C5	V3 35W4
1	0Ω	150Ω	NC
2	2200Ω	470K	NC
3	12Ω	12Ω	180Ω
4	0Ω	62Ω	215Ω
5	0Ω	470K	240Ω
6	0Ω	† 1470Ω	NC
7	† 100K	† 620Ω	20K(MIN)

† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

395-8

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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SET 395 FOLDER 8

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AT6	
V2	Output	50C5	

ITEM No.	USE	TYPE	NOTES
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	1019		BBRQ44315C	WQ230			*R2527
B	40	150							
C	20	150							
D	20	25							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C3	.05	200		P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C4	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C5	.05	200		P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C6	.05	400		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	3meg	½	401E	BT-8517	A47F3-3meg	Q13-140	U57	Volume, Tap ⓐ 300K ①
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	100K	½	416	B-40	A47-100K-S	Q11-128	U41	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

① Tap not used.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		CORONADO PART No.	NOTES
	OHMS	WATT		
R3	270K			
R4	100K			
R5	2200Ω			
R6	22K			
R7	470K			

ITEM No.	RATING		CORONADO PART No.	NOTES
	OHMS	WATT		
R8	1000Ω			
R9	150Ω			
R10	470Ω	1		
R11	120Ω	10		
R12	27Ω		542	

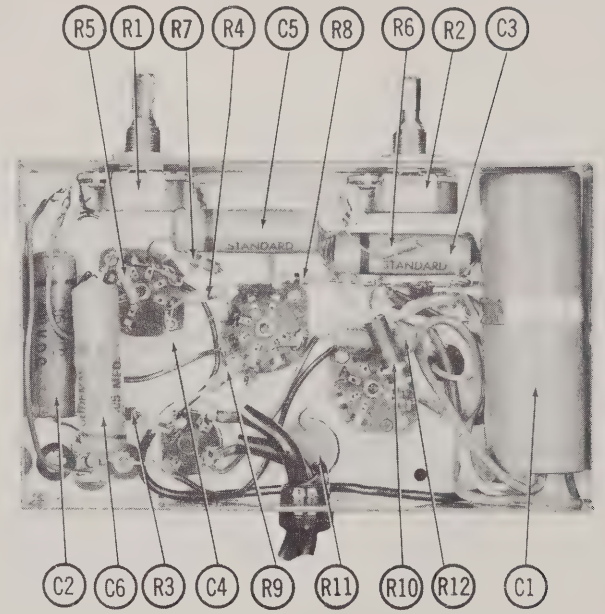
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	1209C							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	QUAM PART No.	
SP1	7"	PM	3-4Ω	2629 ①	7A21 ①	① Parallel and phase
SP2	3½"	PM	16Ω	2633 ①	3A15TZ16 ①	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	CORONADO PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1	2589	81-TB		56	*PT-1	* Not necessary unless original mounting mechanism is damaged.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	CORONADO PART No.	JENSEN PART No.	WALCO PART No.	
M2				

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	2430C	Volume
Knob	2430B	Tone

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MADISON FIELDING
MODEL A15

MADISON FIELDING
MODEL A15

MADISON FIELDING
MODEL A15

TRADE NAME	Madison Fielding Model A-15
MANUFACTURER	Madison Fielding Corp., 863 Madison Street, Brooklyn 21, N. Y.
TYPE SET	AC Operated 4 Channel Audio Amplifier With Transistorized Preamplifier
TUBES (Five)	Types 12AX7/ECC83 AF Amplifier, 12AX7/ECC83 AF Amp. - Phase Inv., (2) 6BQ5/EL84 Output, 6CA4/EZ81 Rectifier
POWER SUPPLY	105-125 Volts AC-50/60 Cycles RATING .70 Amp. @ 117 Volts AC (72 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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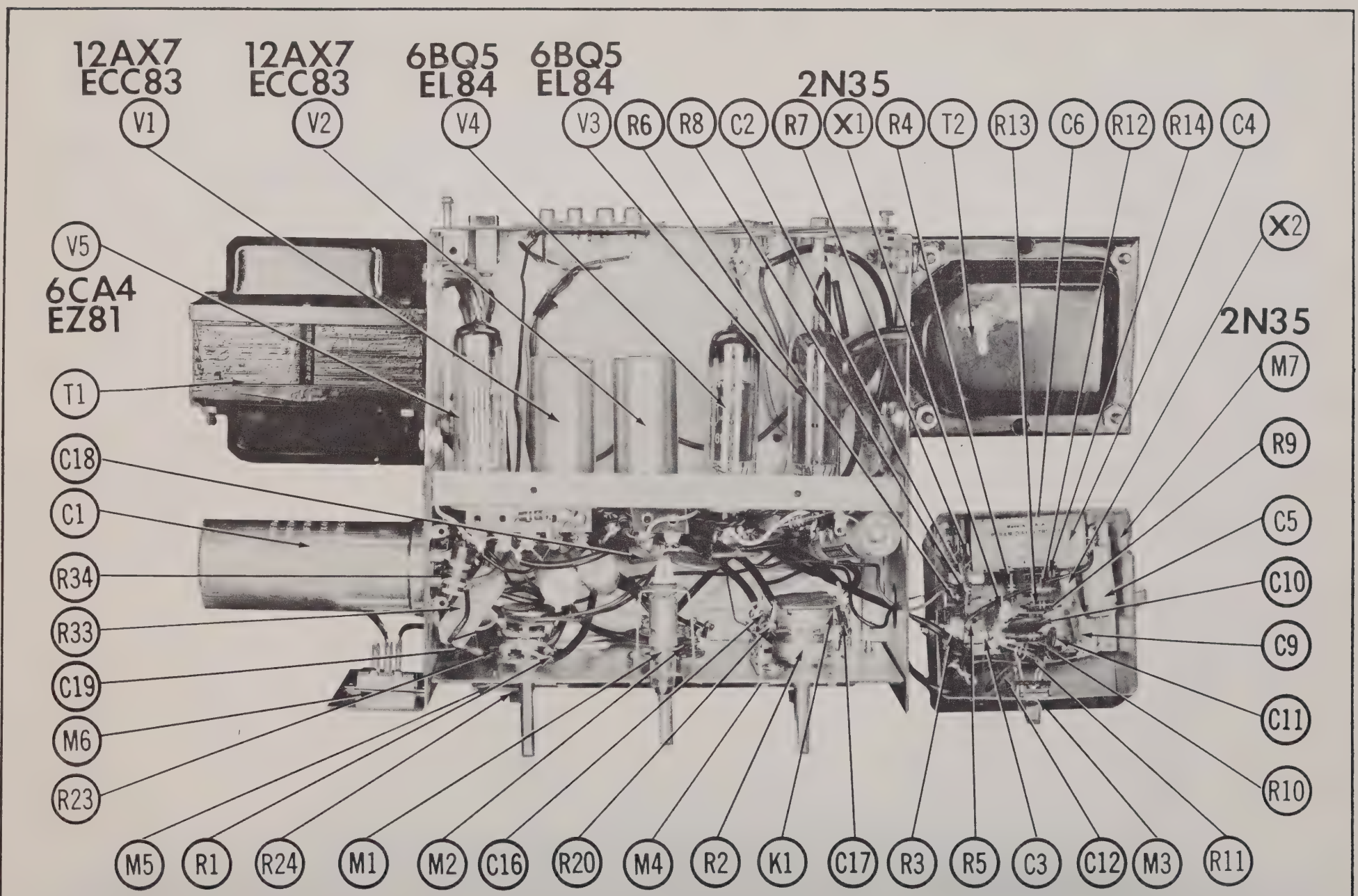


CHASSIS- BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	AF Amplifier	12AX7/ECC83
V2	AF Amp. - Phase Inv.	12AX7/ECC83
V3	Output	6BQ5/EL84

ITEM No.	USE	TYPE
V4	Output	6BQ5/EL84
V5	Rectifier	6CA4/EZ81

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N35	1st Preamplifier	2N439		2N35	
X2	2N35	2nd Preamplifier	2N439		2N35	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Madison Fielding PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	◓40	450	CE3X404	AFH3-44			TMT-40	T-170	TVL-3787
B	■40	450							
C	▲40	450	①						
C2	2	12		XPP12002	NL2-6	TT12X2	ML2-15		R2537 *
C3	2	12		XPP12002	NL2-6	TT12X2	ML2-15		R2537 *
C4	150	25		PRS50V150	BR2502		TD-150-50		R2536 *
C5	100	15		SRE15V100	BBR100-15			S-055	R2535 *
C6	150	2		PWE3V200					R2474 *
C7	25	3		SRE3V25	BBR25-3	TT3X25	ML25-3	MMT-325	TE-1055
C8	150	15		PRS50V150	BR1505	┌TC2501	ML100-15		R2475 *
						└TC29			

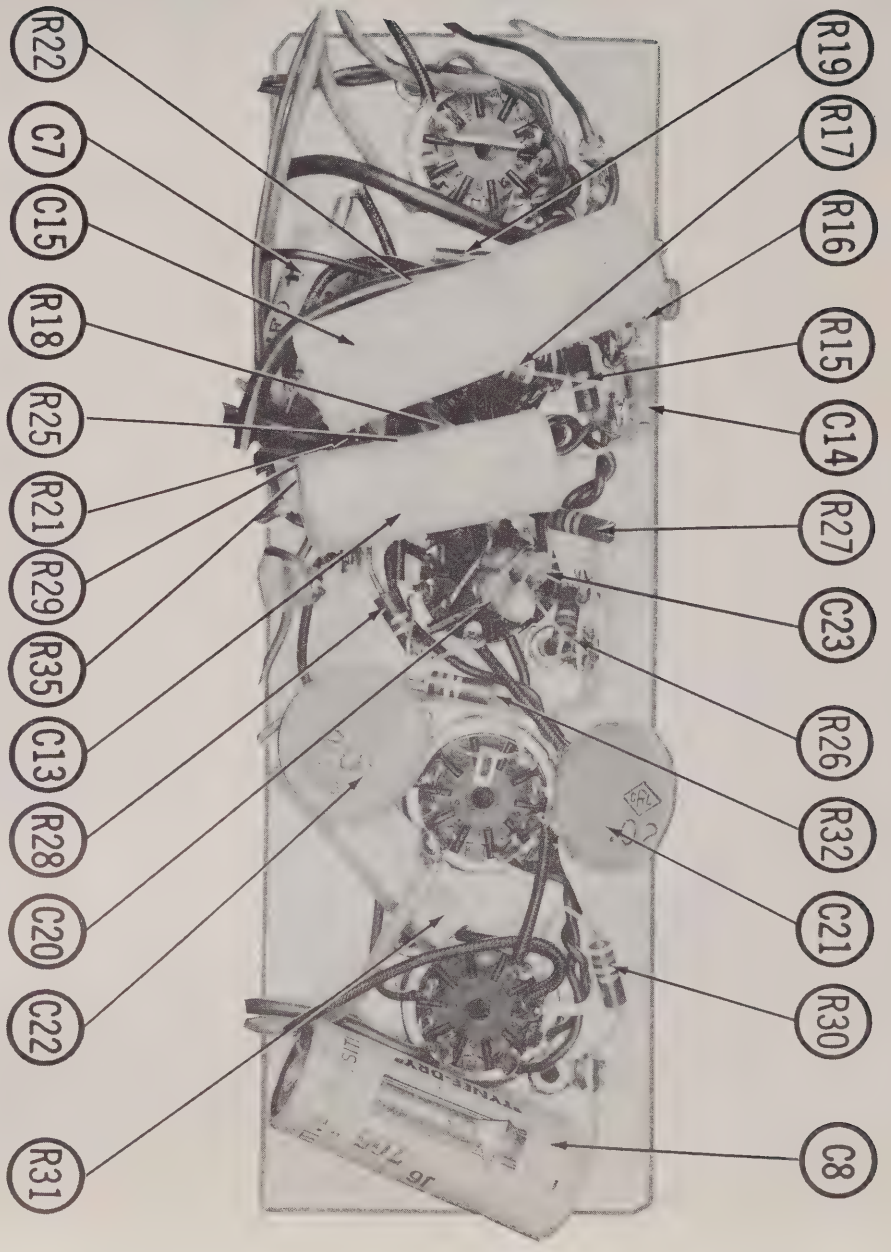
① In some versions C1C is a single unit, 12mfd @ 350V (Part #CE-1235). * Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Madison Fielding PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C9	100000								TG-P10	
C10	3500									10%
C11	8700									10%
C12	3500									10%
C13	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C14	47			SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C15	.22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	
C16	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C17	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C18	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C19	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C20	68			SI 68	D6-680	LT6Q68	GP-68	UC-5468	5GA-Q68	
C21	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C22	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C23	47			SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Madison Fielding PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K		RV-1050					Volume, Tap ⓐ 100K
B	100K							Volume
R2A	1meg		RV-1001	F1-51		[♦	[■ UE3764	Bass
B	500K			R4-42				Treble, Tap ⓐ 250K
R3	500K		RV-5041					Level

♦ Concentrikit Equivalent; K-6 Kit, Base Elements and Shafts: B11-137, P14-029 (Panel) B19-133X, R1-111 (Rear)

■ STA-LOC Equivalent: FA16L, OS875A, RU55T254, IS1375

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Madison Fielding PART No.	NOTES
	OHMS	WATT		
R4	270K			
R5	150K			
R6	6800Ω			
R7	120K			
R8	470K			
R9	560Ω			
R10	22K			
R11	22K			
R12	18K			
R13	10K			
R14	3300Ω			
R15	220K			
R16	820K			
R17	470K			
R18	100K			
R19	1500Ω			
R20	120K			
R21	100K			
R22	2700Ω			
R23	10K			
R24	47K			
R25	470K			
R26	680Ω			
R27	18K			Note 1
R28	100K			
R29	100K			
R30	470K			
R31	150Ω	7		
R32	470K			
R33	150Ω	7		
R34	3300Ω	2		Note 2
R35	22K			

Note 1. Some versions use 15K in this application.
Note 2. Some versions use 2200Ω in this application.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Madison Fielding PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .70A	680VCT ⓐ .040A	6.3V ⓐ 3.2A	TP-1001	P9310			PC8409①		R-11A

① Tape 5V ⓐ 2A winding.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Madison Fielding PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7700Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	TO-1002	Z1405	A-3128		A-3307	22S66	S-31A	

COMPONENT COMBINATIONS

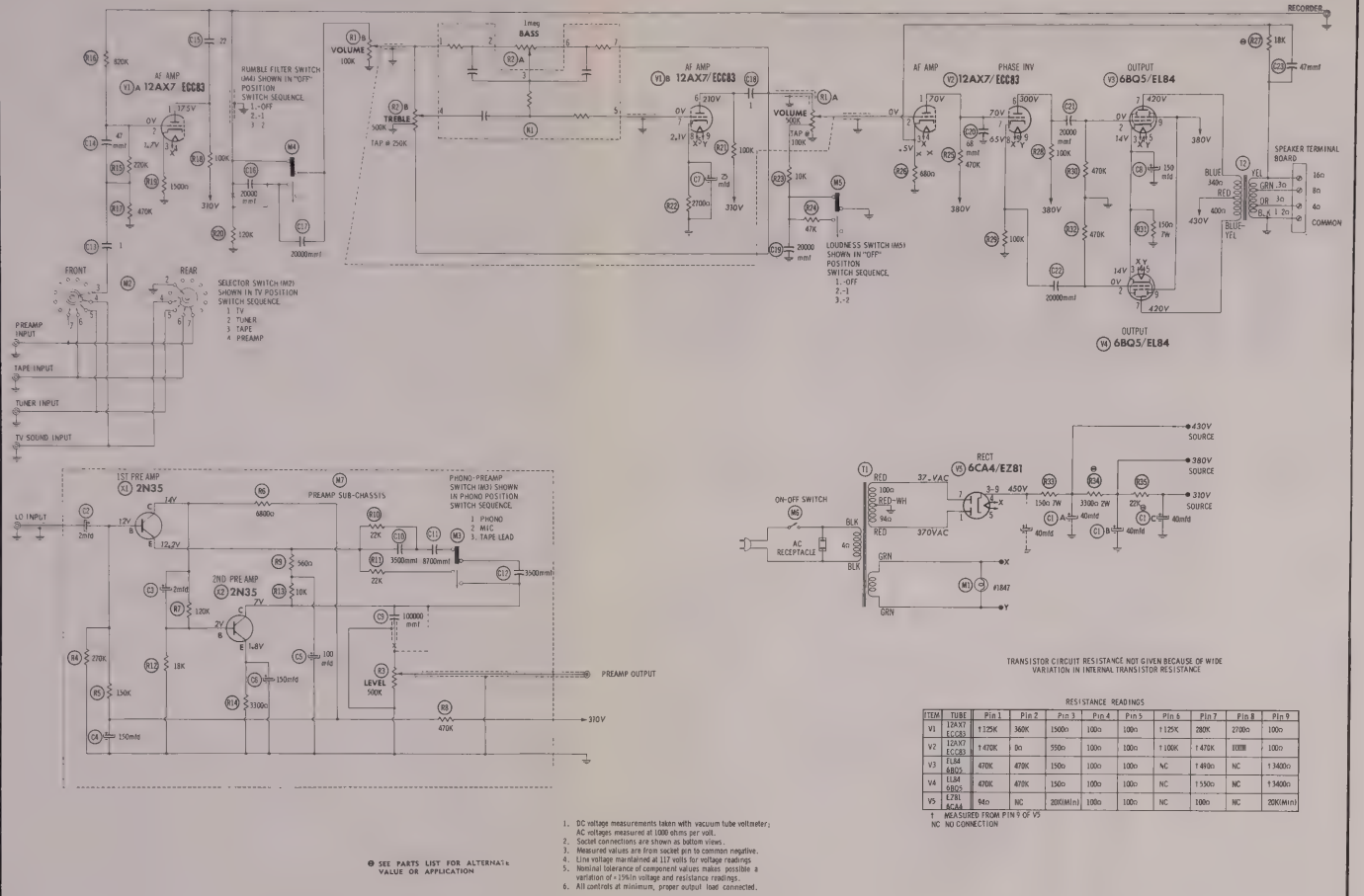
ITEM No.	USE	DESCRIPTION	Madison Fielding PART No.	REPLACEMENT DATA
K1	Tone Comp. Net.		RP-1001	

MISCELLANEOUS

ITEM No.	PART NAME	Madison Fielding PART No.	NOTES
M1	Pilot Lamp	I-1001	#1847
M2	Switch	SF-1001	Function (Rotary Wafer Type)
M3	Switch	SS-1002	Phono-Preamp (Slide Type DPDT)
M4	Switch	SS-1002	Rumble Filter (Slide Type DPDT)
M5	Switch	SS-1002	Loudness (Slide Type DPDT)
M6	Switch	SS-1005	Power On-Off (Slide Type SPST)
M7	Preamp. Sub-Chassis	MF-113	Complete

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	†125K	360K	1500Ω	100Ω	100Ω	†125K	280K	2700Ω	100Ω
V2	12AX7 ECC83	†470K	0Ω	550Ω	100Ω	100Ω	†100K	†470K	100Ω	100Ω
V3	EL84 6BQ5	470K	470K	150Ω	100Ω	100Ω	NC	†490Ω	NC	†3400Ω
V4	EL84 6BQ5	470K	470K	150Ω	100Ω	100Ω	NC	†550Ω	NC	†3400Ω
V5	EZ81 6CA4	94Ω	NC	20K(Min)	100Ω	100Ω	NC	100Ω	NC	20K(Min)

† MEASURED FROM PIN 9 OF V5
NC NO CONNECTION

❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

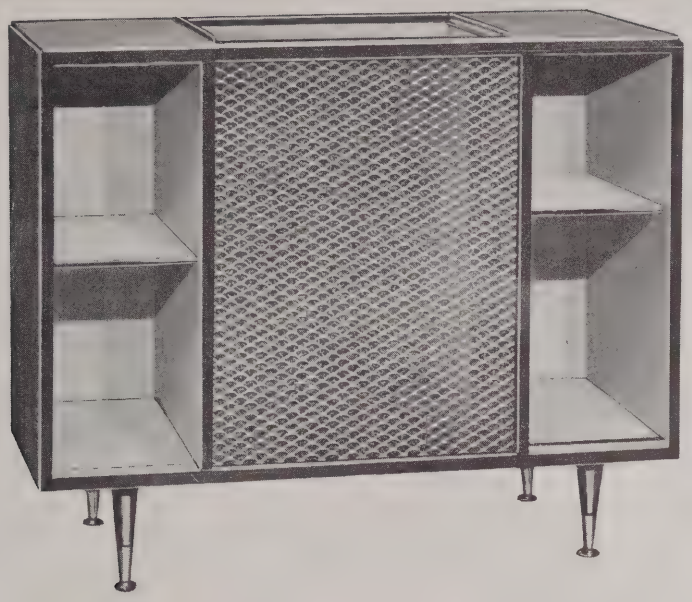
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

PHOTOFACT* Folder

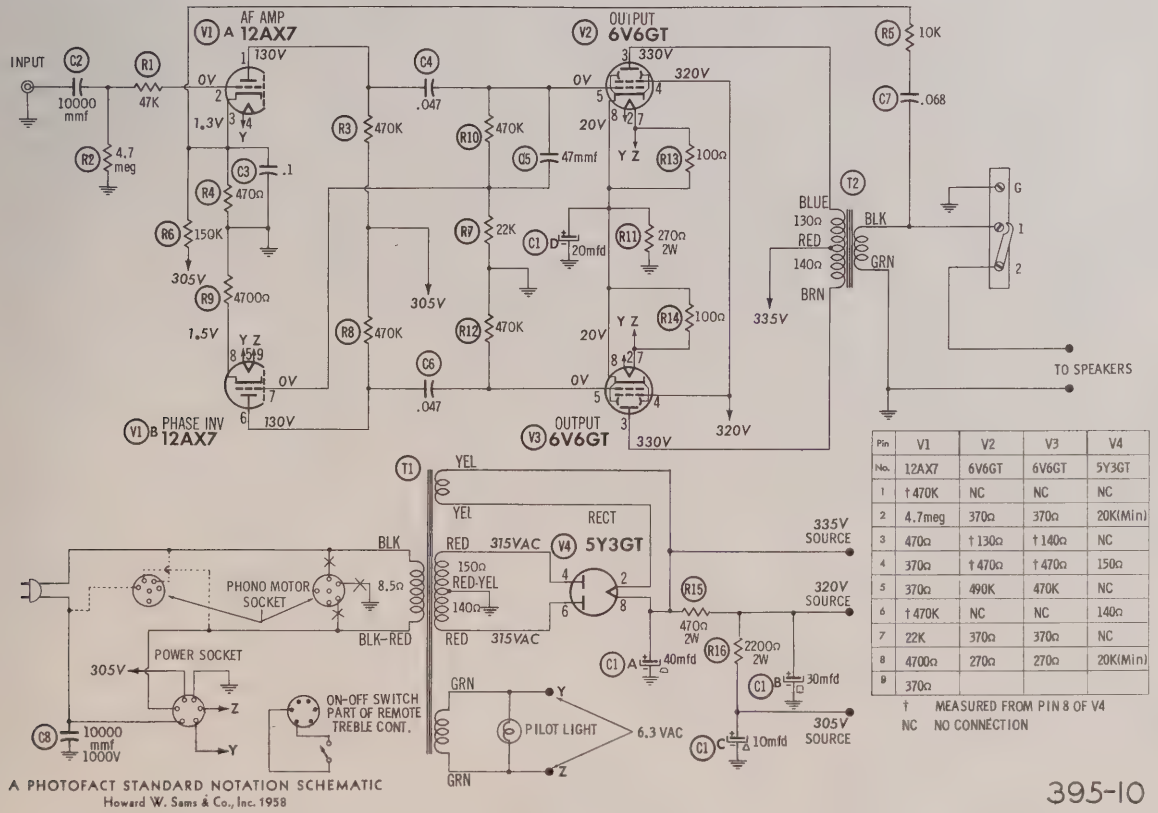
*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MAGNAVOX CHASSIS
AMP-164AA, AMP-164BA



TRADE NAME	Magnavox Chassis AMP-164BA
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana
TYPE SET	AC Operated Phono Amplifier
TUBES (Four)	Types 12AX7 AF Amp. - Phase Inv., (2) 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-50/60 Cycles RATING .62 Amp. @ 117 Volts AC (62 Watts)



Pin No.	V1 12AX7	V2 6V6GT	V3 6V6GT	V4 5Y3GT
1	†470K	NC	NC	NC
2	4.7meg	370Ω	370Ω	20K(Min)
3	470Ω	†130Ω	†140Ω	NC
4	370Ω	†470Ω	†470Ω	150Ω
5	370Ω	490K	470K	NC
6	†470K	NC	NC	140Ω
7	22K	370Ω	370Ω	NC
8	4700Ω	270Ω	270Ω	20K(Min)
9	370Ω			

† MEASURED FROM PIN 8 OF V4
NC NO CONNECTION

395-10

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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MAGNAVOX CHASSIS
AMP-164AA, AMP-164BA
SET 395 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. - Phase Inv.	12AX7	
V2	Output	6V6GT	
V3	Output	6V6GT	
V4	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	270021-56	AFH4-78	D0640	FP429	TMQ-92	Q-380	TVL-4734
B	■30	450							
C	▲10	450							
D	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	10000		250218-19	BPD-01	DD-103	BYA6S1	ED-01	DC5I1	5HK-S1	
C3	.1	200	250202-13	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C4	.047	400	250211-11	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C5	47		250207-44	SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C6	.047	400	250211-11	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C7	.068	200	250202-12	P288N-068		CUB4S68		GEM-4168	4TM-S68	
C8	10000	1000	250219-2	DAC-27	DD16-103	CUB10S1			BL-S10	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R1	47K		230104-82	
R2	4.7meg		230104-106	
R3	470K		230104-94	
R4	470Ω		230104-58	
R5	10K		230104-74	
R6	150K		230104-88	
R7	22K		230104-78	
R8	470K		230104-94	
R9	4700Ω		230104-70	
R10	470K		230104-94	
R11	270Ω	2	230106-1055	
R12	470K		230104-94	
R13	100Ω		230104-50	
R14	100Ω		230104-50	
R15	470Ω	2	230106-1058	
R16	2200Ω	2	230106-66	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .62A	612VCT @ .082A	5V @ 2A	6.3V @ 1.2A	300078-2	P9305 ①	P-3052	PM8408 ①	22R04 ①	R-9B ①

① Tape center tap on 6.3V winding.

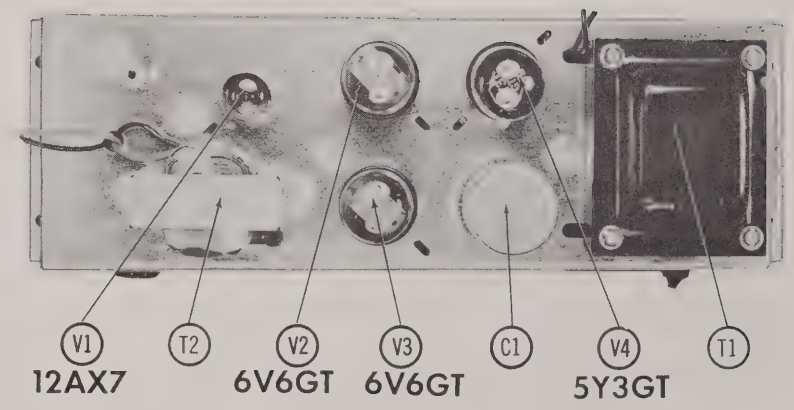
TRANSFORMER (AUDIO OUTPUT)

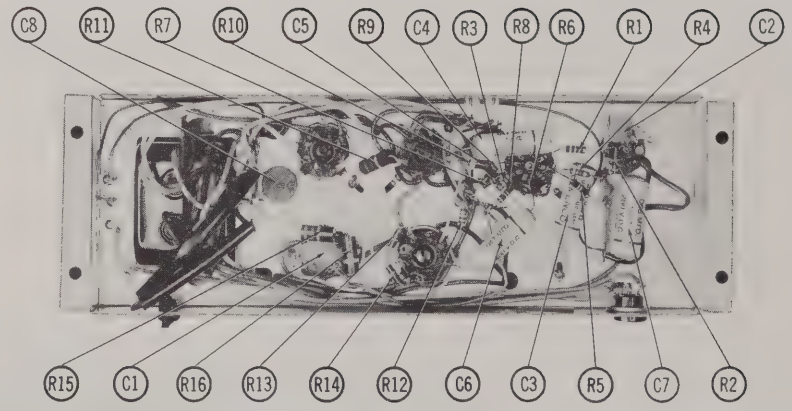
ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6800Ω CT	3-4Ω	330038-1	Z1011	A-2901 ①	A-3870	22S58	S-53X	① Drill new mounting hole.

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW





CHASSIS—BOTTOM VIEW

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RCA VICTOR MODELS
SHF6, SHF7 (Ch. RS-164, A)

RCA VICTOR MODELS
SHF6, SHF7 (Ch. RS-164, A)

RCA VICTOR MODELS
SHF6, SHF7 (Ch. RS-164, A)

TRADE NAME	RCA Victor Models SHF-6, SHF-7 (Ch. RS-164, RS-164A)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Five)	Types 6AV6 1st AF Amplifier, 6CG7 2nd AF Amp. - Phase Inv., (2) 6V6 GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .60 Amp. @ 117 Volts AC (59 Watts Without Motor)

FOR SERVICE INFORMATION ON RP-205C-2 RECORD CHANGER—SEE RCA RP-205 SERIES—PHOTOFACT SET 358 FOLDER 10

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H350

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st AF Amplifier	6AV6	
V2	2nd AF Amp. - Phase Inv.	6CG7	
V3	Output	6V6GT	
V4	Output	6V6GT	
V5	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	35	400	101414	AFH4-78-10	D0650	FP429	TMQ-99	Q-385	TVL-4736
B	35	400							
C	10	350							
D	20	25							
C2	50	6	78573	XPP-6050	BBR50-6	TT6X50	TD-50-6	MMT-650	TVA-1100
C3	8	10VAC	100509	AC-PRS10V8	BBR16-90 † BBR16-90 †	TC108	TD-16-150 † TD-16-150 †	MT-1516 † MT-1516 †	R2201 *

† Connect negative leads together. * Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	.0027	600	73599							10%
C5	.0056	200	102086A					GEM-16256		10%
C6	.015	200	77943							10%
C7	270		77838		D6-271	L10T27	ED-270		MS-327	① 10%
C8	.047	400	78921B					GEM-1615		10%
C9	.0015	400	102216							10%
C10	150		78276	NPO-SI 150	D6-151	L10T15	ED-150	ZT-5315	MS-315	10%
C11	330		76552		D6-331	L10T33	ED-330		MS-333	10%
C12	.047	400	73553					GEM-1615		10%
C13	.047	400	73553					GEM-1615		10%
C14	.047	400	73553					GEM-1615		10%
C15	220		77460	NPO-SI 220	D6-221	L10T22	ED-220		MS-322	10%

① Not used in chassis RS-164A

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1.5meg	½	104116	BT-167		Q18-139XX	UDT-291	Loudness, Tap @ 250K, 500K
R2	2meg	½	104118	B-77		Q17-139		Bass
R3A	750K	½	104117	B-66	A47-750K-S	Q11-136	U54	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

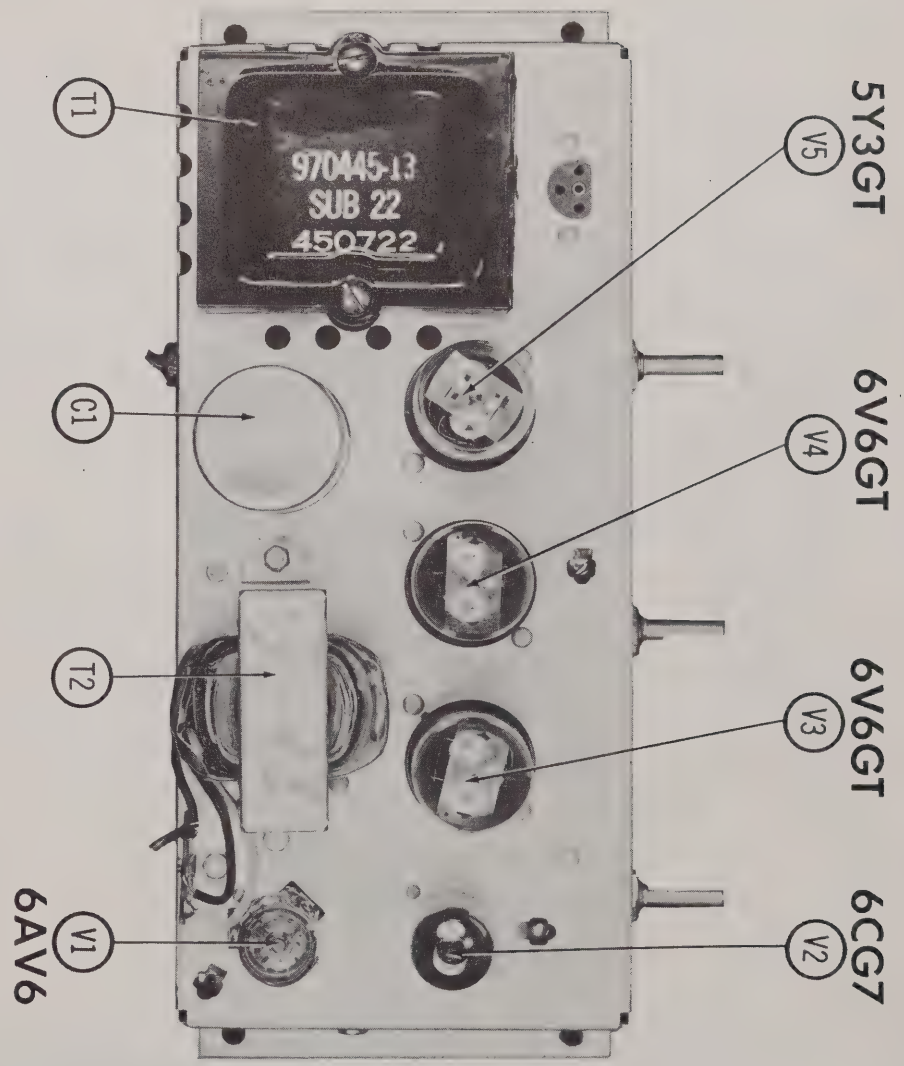
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R4	15K		502315	
R5	560K		502456	
R6	39K		502339	
R7	27K		502327	
R8	820K		502482	
R9	220K		502422	
R10	18K		502318	Note 1
R11	2700Ω		502227	
R12	150K		502415	
R13	82K		502382	
R14	5600Ω		502256	
R15	12K		502312	
R16	56K		502356	
R17	22K		502322	
R18	27K		502327	
R19	2700Ω		502227	
R20	22K		502322	
R21	470K		502447	
R22	270Ω	2	522127	
R23	470K		502447	
R24	2200Ω	2	522222	
R25	4700Ω	1	512247	

Note 1. Not used in Chassis RS-164A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .60A	560VCT @ .070A	5V @ 2A	104115						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.7A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7100Ω CT	8Ω Tap @ 4Ω	103914	Z1404 ①				24S56 ①		① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	100897 ①	12A10PA	① Used in Model SHF-6
SP2	3½"	PM	6-8Ω	100465 ① ②	3A15TZ6.6	② Used in Model SHF-7
SP3	3½"	PM	6-8Ω	100465 ① ②	3A15TZ6.6	
	8"	PM	3-4Ω	78597 ②	8A31	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	RCA Victor PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1	100653	55T or 81-TB	GD-J	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	RCA Victor PART No.	JENSEN PART No.	WALCO PART No.	
M2	78827	† S-66 or †♦ S-66SD or ♦ S-66D	† W75TPS or †♦ W75DS or ♦ W75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M3	Switch	33900	Phono-Stereo (Slide Type)
M4	Phono Motor	102541	

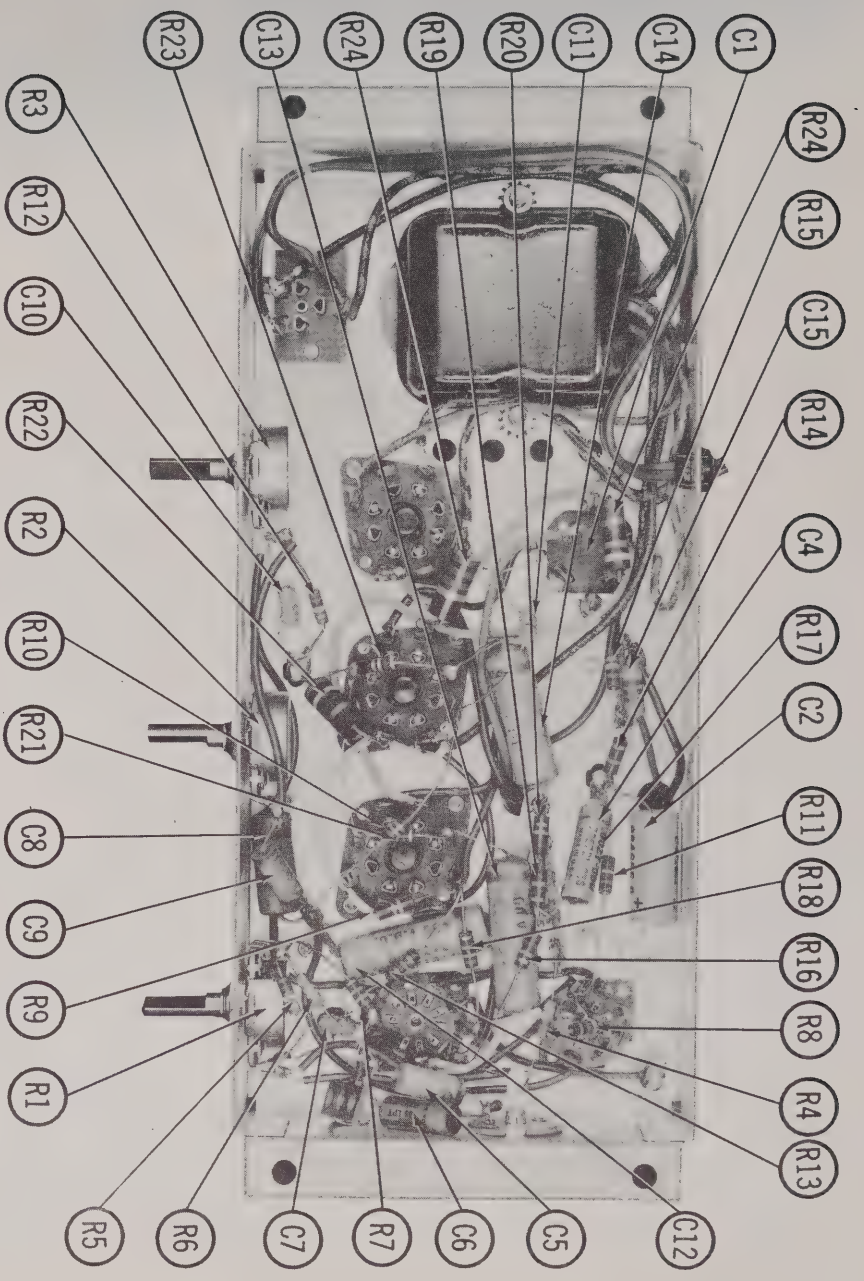
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW

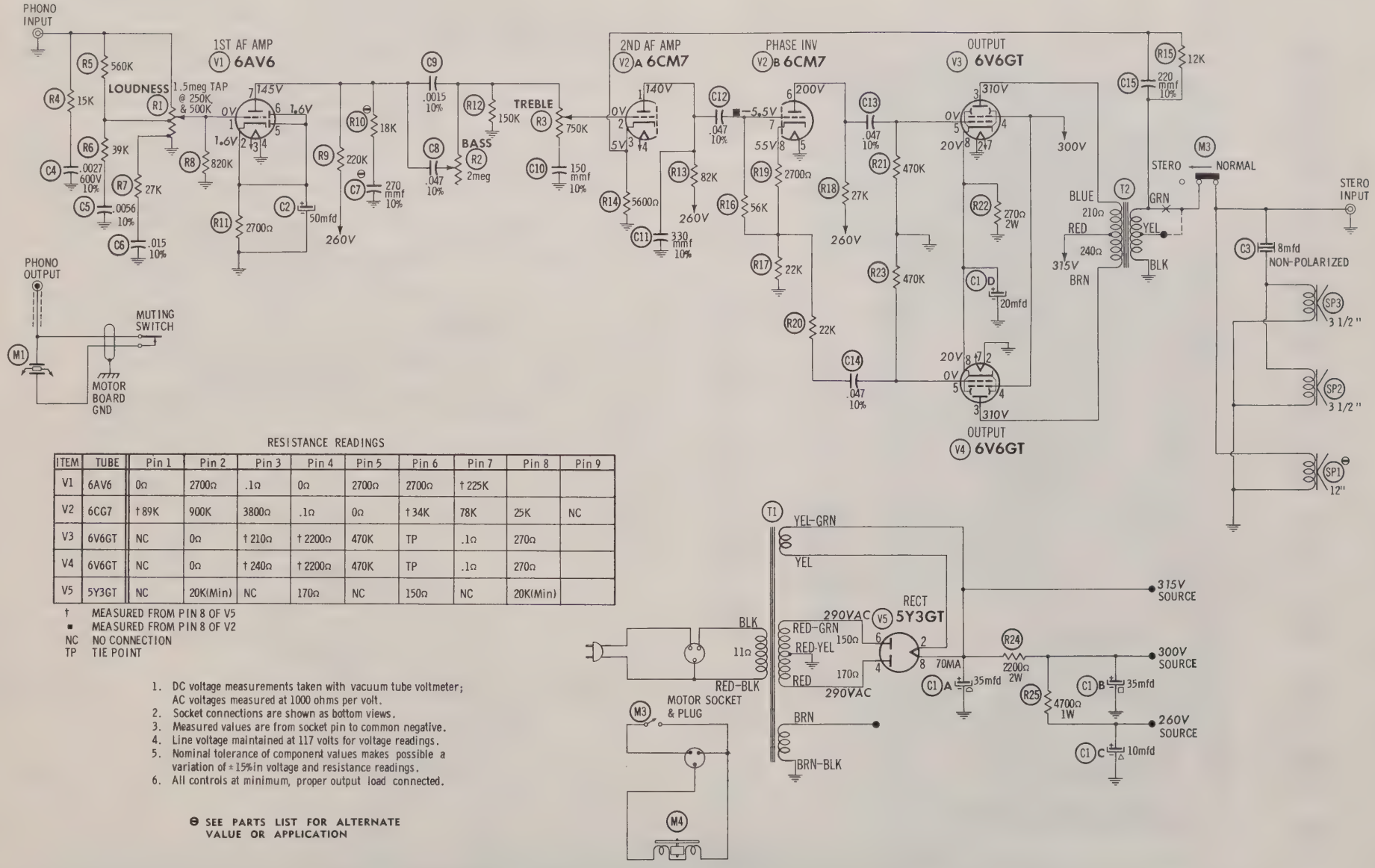


SET 395 FOLDER 11

FOLDER 11

RCA VICTOR MODEL SHF-6 (CH. RS-164)

RCA VICTOR MODEL SHF-6 (CH. RS-164)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AV6	0Ω	2700Ω	.1Ω	0Ω	2700Ω	2700Ω	†225K		
V2	6CG7	†89K	900K	3800Ω	.1Ω	0Ω	†34K	78K	25K	NC
V3	6V6GT	NC	0Ω	†210Ω	†2200Ω	470K	TP	.1Ω	270Ω	
V4	6V6GT	NC	0Ω	†240Ω	†2200Ω	470K	TP	.1Ω	270Ω	
V5	5Y3GT	NC	20K(Min)	NC	170Ω	NC	150Ω	NC	20K(Min)	

† MEASURED FROM PIN 8 OF V5
▪ MEASURED FROM PIN 8 OF V2
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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*TRADE MARK

RCA VICTOR MODELS 9US5H, 9US5KE (Ch. RC-1170A)

RCA VICTOR MODELS
9US5H, 9US5KE (Ch. RC-1170A)

TRADE NAME	RCA Victor Models 9-US-5H, 9-US-5KE (Ch. RC-1170A)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated AM Receiver With 4 Speed Automatic Record Changer
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det. - AVC - AF Amp. 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.27 Amp. @ 117 Volts AC (27 Watts Without Phono)
TUNING RANGE—BROADCAST	540 - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 12BA6 (V2). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	High side to Ant. stator of tuning cap. Low side to B-.	"	"	"	A3, A4	"
3.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	Tune to 1400KC signal	"	A6	"
5.		"	600KC	Tune to 600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning capacitor. Repeat steps 3, 4, and 5.

FOR SERVICE INFORMATION ON RECORD CHANGER RCA RP-205B-4 — SEE RCA RP-205 SERIES - PHOTOFACT SET 358 FOLDER 10

RCA VICTOR MODELS
9US5H, 9US5KE (Ch. RC-1170A)

SET 395 FOLDER 12

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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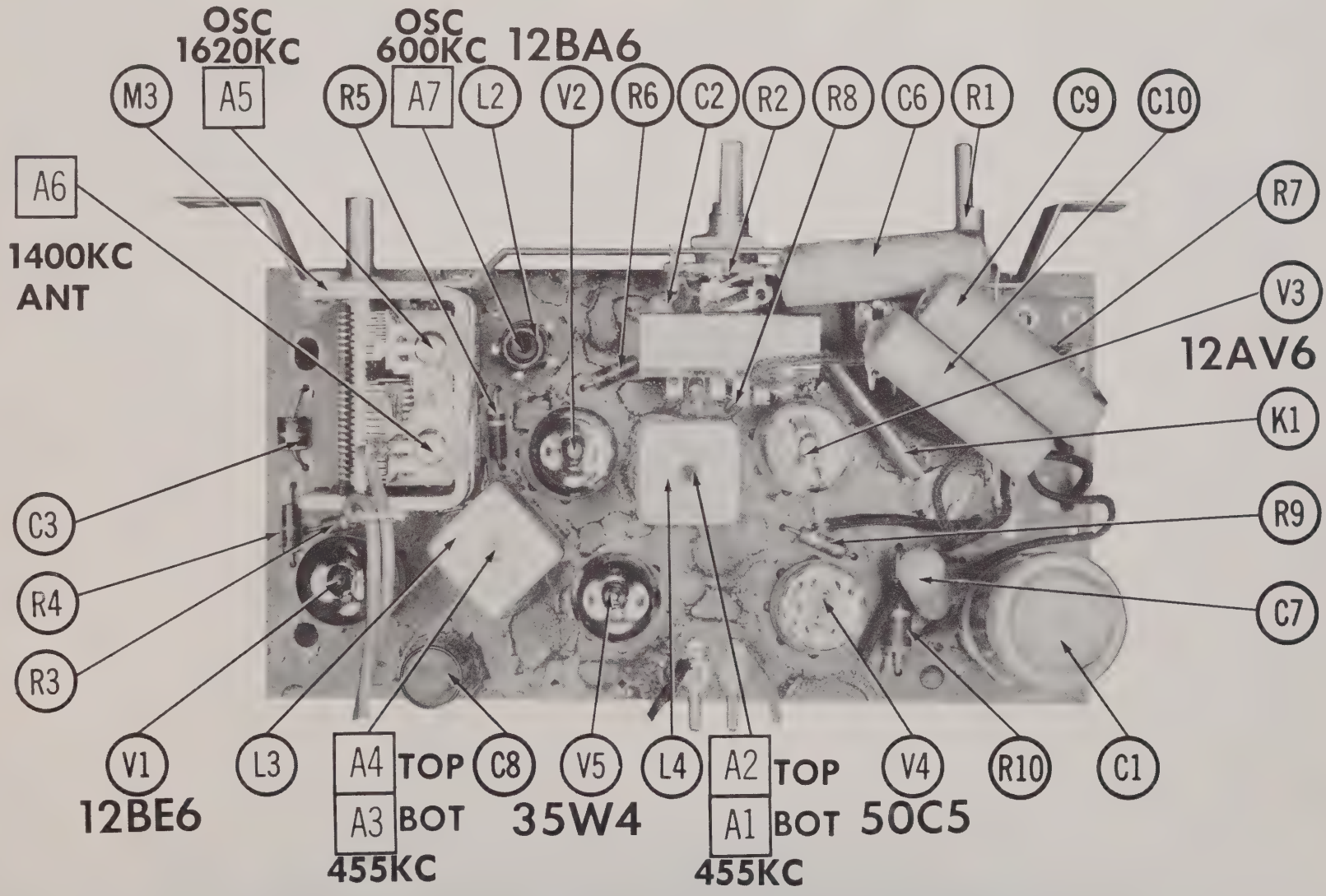


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. - AVC - AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	104581	PRS150V5050	BBRD5515	TCD49	TDLD-9	CADP-1550	TVA-2453
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	400	73553	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C3	56		100085	NPO-SI 56	D6-560	L10Q56	TCO-56		MS-456	10%
C4	10000		73960	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C5	10000		73960	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	.082	200	104574							10%
C7	.012	400	103195							10%
C8	.047	400	103239	P488N-047		BC6S47J		ACE6147	6SE-S47	
C9	.047	400	73553	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C10	.047	400	73553	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C11	470		75198		D6-471	5R5T47	ED-470		MS-347	10%

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	103208					Volume
B	Switch							Power On-Off
R2A	50K	½	104575					Tone
B	Switch							Phono-Radio

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R3	33K		502333	
R4	100Ω		502110	
R5	3.3meg		502533	
R6	100Ω		502110	
R7	47K		502347	
R8	3.3meg		502533	
R9	150Ω		502115	
R10	1200Ω	1	512212	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3000Ω	6-8Ω	104976							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4" X 6"	PM	6-8Ω	104961	46A1	

PARTS LIST AND DESCRIPTIONS (Continued)
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Ant.	104577					
L2	Osc. Coil	103204					
L3	Input IF	103206					
L4	Output IF	103207					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	5000mmf, 5000mmf, 220mmf, 125mmf, 250mmf, 470K, 470K, 6.8meg	103205	Sprague DT-5

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA RCA Victor PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	100653	55-T or 81-TB	GD-J	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA RCA Victor PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	78827	† S-66 or †♦ S-66SD or ♦ S-66D	† W75TPS or †♦ W75DS or ♦ W75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M3	Tuning Cap.	103209	2 Gang (Ant. 22-410mmf)
M4	Phono Motor		

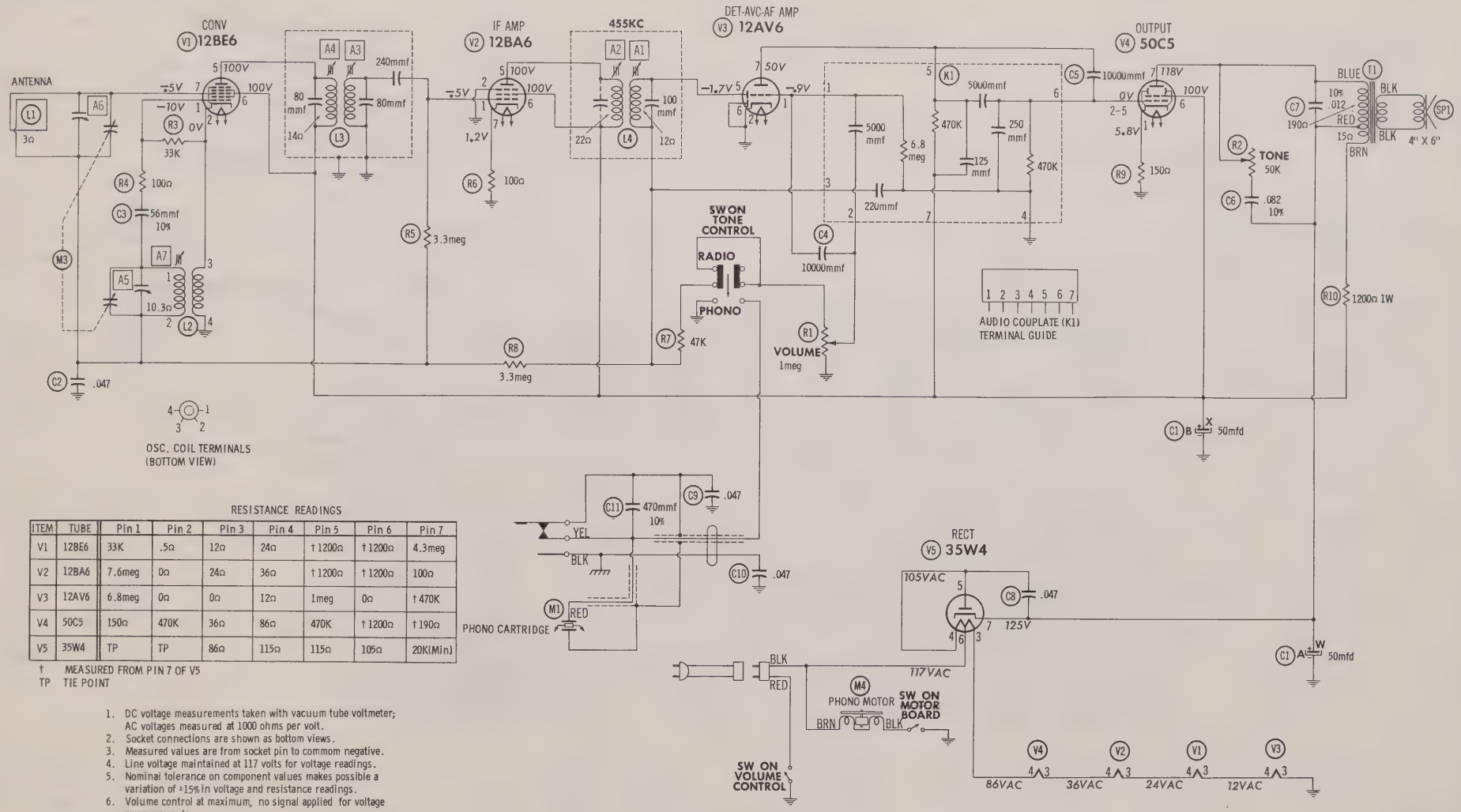
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	103631	Tone-Function & On-Off-Volume
Knob	104579	Tuning
Cabinet	X4197	Two tone Green, Model 9-US-5H
Cabinet	X4198	Tan & White, Model 9-US-5KE
Handle	104152	Model 9-US-5H
Handle	104576	Model 9-US-5KE

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors; 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	33K	.5Ω	12Ω	24Ω	†1200Ω	†1200Ω	4.3meg
V2	12BA6	7.6meg	0Ω	24Ω	36Ω	†1200Ω	†1200Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1200Ω	†190Ω
V5	35W4	TP	TP	86Ω	115Ω	115Ω	105Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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Howard W. Sams & Co., Inc. 1958

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*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

REVERE MODELS
T-700D, TR-800D

REVERE MODELS
T-700D, TR-800D

REVERE MODELS
T-700D, TR-800D

GENERAL INFORMATION

Revere Models T-700D and TR-800D Tape Recorders feature fingertip operation for "Stop", "Play", "Speaker", and "Record". The two units incorporate the same tape transport mechanism but differ slightly in amplifier circuitry and component values. The difference in the amplifier circuitry and associated values result from the addition of the B199-6 Radio Tuner Sub-Assembly used in Model TR-800D.

These units are designed to record two tracks of material on standard width recording tape, which doubles the playing time of a tape reel with no loss of frequency response or quality. Recordings can be made from microphone, phonograph, AM-FM tuner, HI-FI systems, external radio or television in addition to those made directly from the self contained radio incorporated in Model TR-800D.

CAUTION: Do not use on direct current. Check name plate at rear of machine for proper current and voltage.

Manufactured by:

Revere Camera Company
320 East Twenty-First Street
Chicago 16, Illinois

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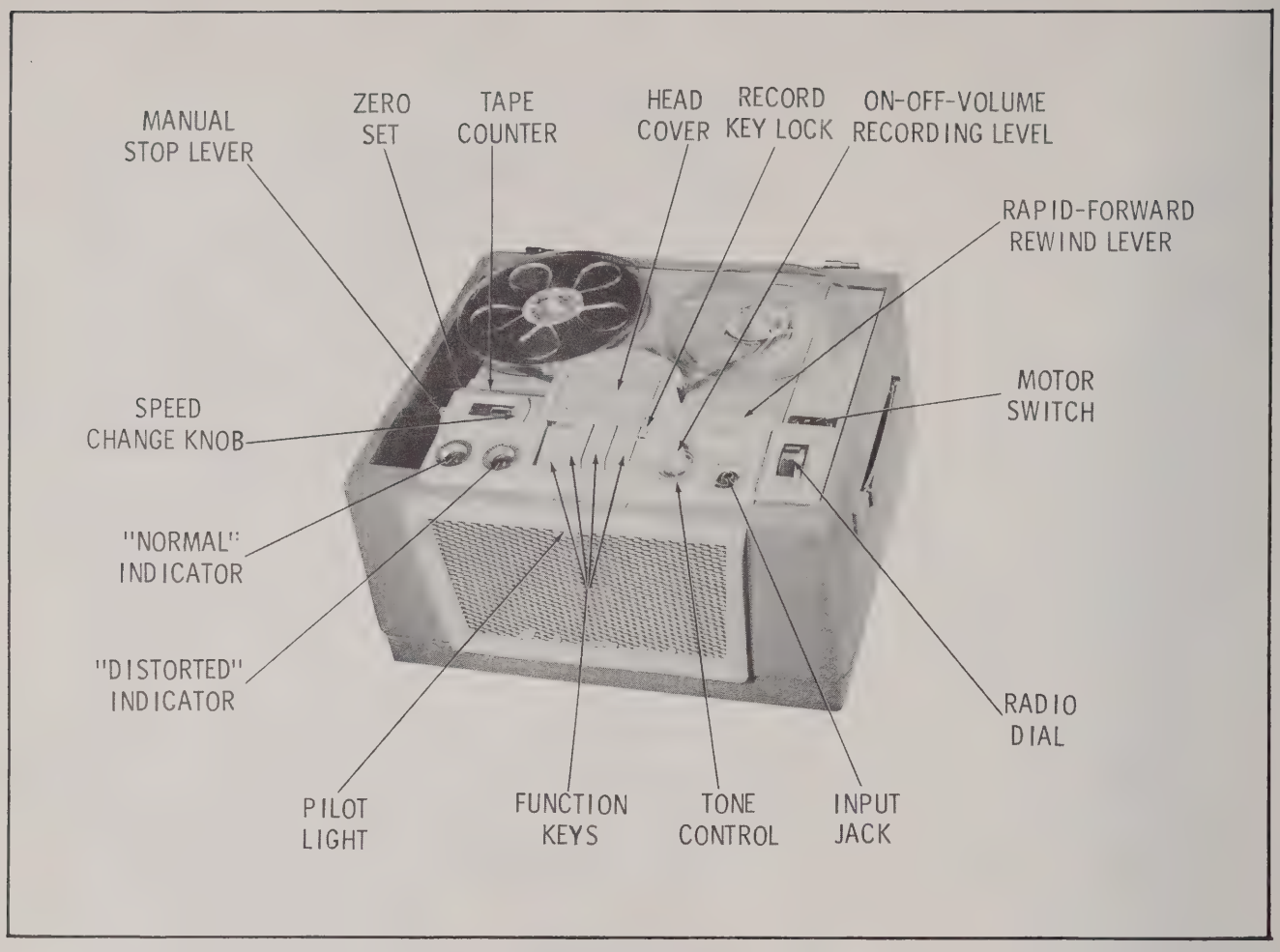


Figure 1

SPECIFICATIONS

Tape Speeds — 3 3/4 and 7 1/2 ips.

Frequency Response —
40-7,500 cps ± 3 db at 3 3/4 ips.
40-14,500 cps ± 3 db at 7 1/2 ips.

Signal To Noise Ratio — Greater than 48db.

Wow And Flutter — Less than .3%.

Distortion — Overall amplifier and tape distortion at low levels is less than 1% and at maximum output of 5 1/2 watts is 8% at 1000 cps.

Recording Indicators — "Normal" indicates 1.5% distortion (or 8 db from saturation) and "Distorted" indicates 8%.

Inputs — Microphone input (2 megohms)
Radio-Phono input (1 megohm).

Output — 3.2 ohm with negative feedback, suitable for direct connection to 3.2 ohm speaker, high impedance, public address input, or earphones.

Reel Size — Up to 7".

Track Selection — Manual turnover.

Fast Forward & Rewind — Approximately 90 seconds on a 7" reel.

Playing Time (7" Reel) — 2 hours at 3 3/4 ips.
(1 hour each track)
1 hour at 7 1/2 ips.
(1/2 hour each track)

Size — 10 1/4" x 16 3/4" x 14 1/2" (Approx.).

Weight Of Recorder — 30 lbs. (Approx.).

Power Requirements — 105-120 Volts A.C., 60 cycles.

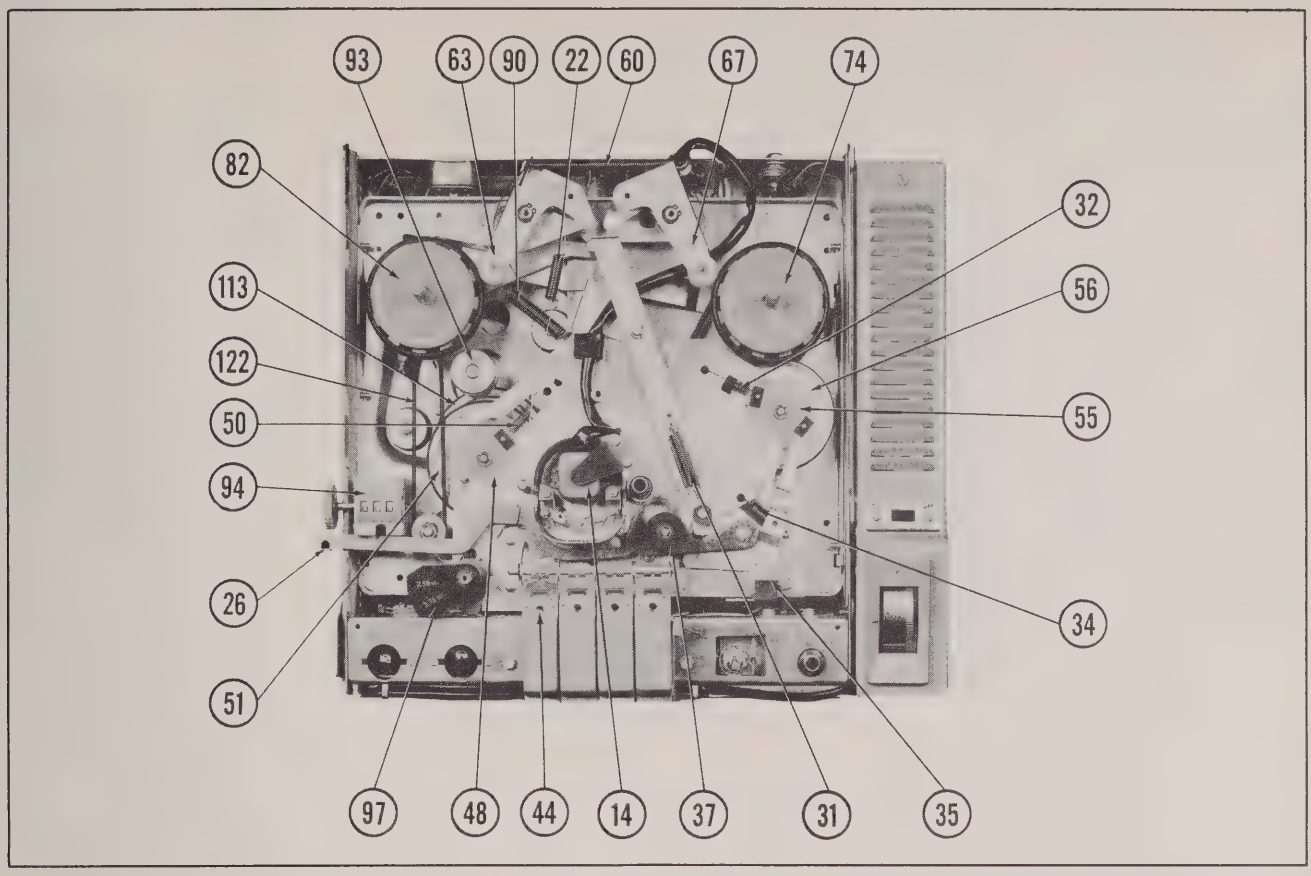


Figure 2

FUNCTIONS OF CONTROLS, INDICATORS, & SWITCHES

On-Off-Volume Control

Clockwise rotation of this control supplies power to the entire recorder and simultaneously regulates the volume for both the recording and play-back operations.

Tone Control

This control is designed to give three distinct tonal extremes and can be varied continuously between them to produce a blend of tone suitable to any type of program. The tone control is automatically disconnected when recording.

Function Keys

All electrical and mechanical functions for Play and Record operations are performed by the function keys.

"Stop" Key – With the "Stop" key in the "up" position, power is supplied to the electrical solenoid which performs the mechanical functions. The solenoid enables the recorder to be operated by an electrical remote control or from a clock switch, a feature which allows a program to be recorded without being present. When "Stop" key is depressed, power is interrupted disengaging all pressure pads and rubber idlers.

"Play" Key – Depression of the "Play" key switches amplifier circuitry enabling play-back of recorded tape. "Speaker" key is automatically engaged when "Play" key is depressed and volume control is temporarily muted.

"Speaker" Key – "Speaker" key may be independently depressed from "Play" key which allows one to monitor material while it is being recorded, to listen to programs from the built-in radio (Model TR-800D), to listen to material from an external source, or to use as a public address system.

"Record" Key – Depression of the "Record" key enables material available at the input jack to be recorded. Automatic record key lock must be released before "Record" key can be depressed.

Rapid Forward-Rewind Lever

This lever is used to skip ahead to any point on the tape or to rewind tape onto the supply reel. By moving this lever back and forth the tape can be inched along in either direction to find an exact point on the tape. This lever can be moved while the recorder is in any function and any previously depressed key automatically disengages.

Manual Start-Stop Lever

This lever, when pulled, instantly stops the tape in either "Record" or "Play" functions. Examples of its use are: To noiselessly hold back the tape to prevent recording unwanted breaks in material or to precisely pre-set the record level while the "Record" key is pressed.

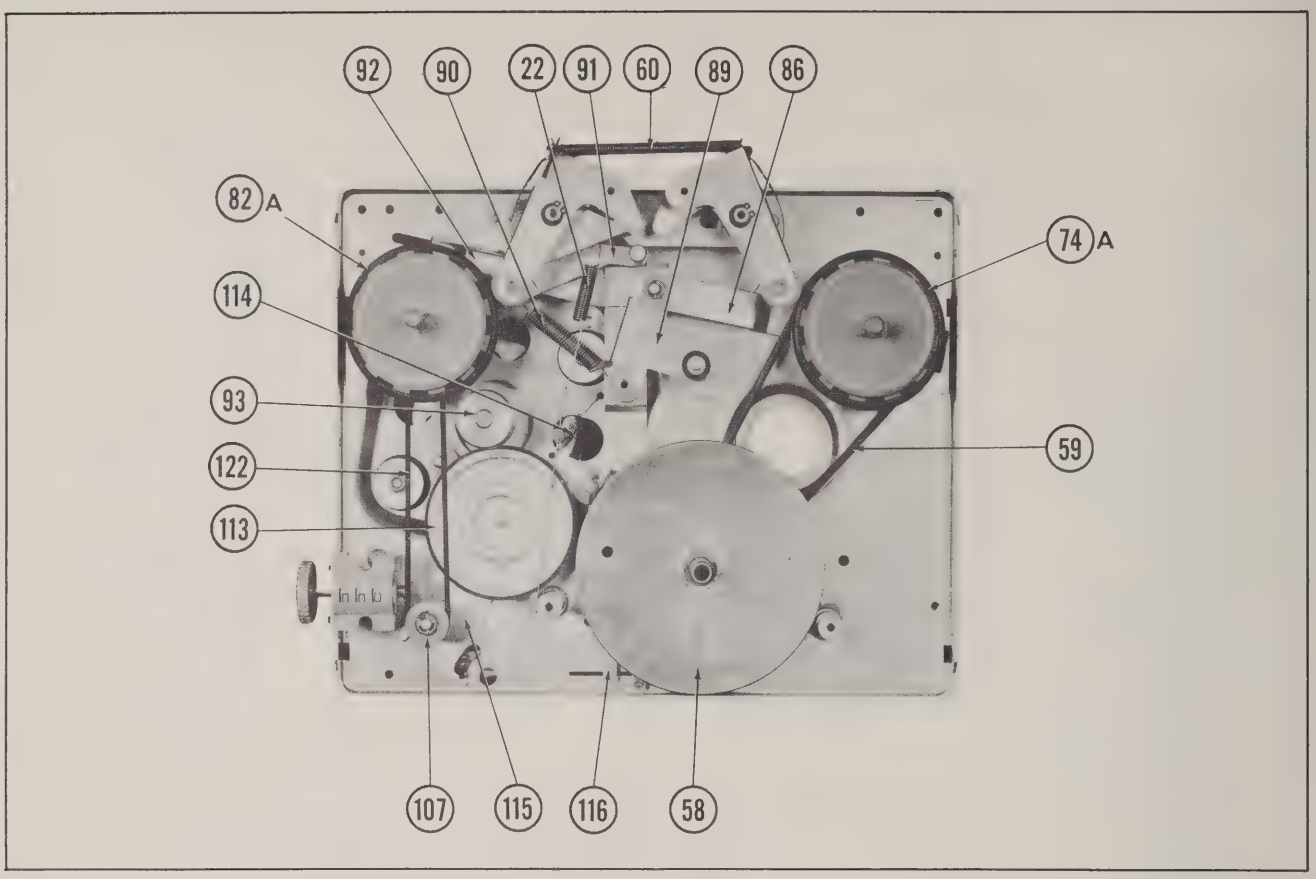


Figure 3

Speed Change Knob

Operation of this knob selects either 3 3/4 ips or 7 1/2 ips tape speeds while the recorder is in any function. The fidelity on 7 1/2 ips selection is greater insofar as recording-reproduction is concerned.

Automatic Record Key Lock

This is a safety device which locks the "Record" key to prevent accidental erasure. To actuate the "Record" key, the "Record Key Lock" must be moved to the right before depressing the "Record" key. In using the Rapid Forward – Rewind Lever, the lock is automatically set.

Record Level Indicators

These indicators take the guess work out of setting the recording level. The volume control should be adjusted until the "Normal" indicator flashes and no flashing occurs at the "Distorted" indicator. If it is desired to pre-set the level in "Stop" position, turn the tone control to treble.

Index Counter

Set the counter to zero at the beginning of a reel. After each selection is recorded, note the counter readings for future reference. In this way, the counter can be used to locate a previously recorded selection on the tape.

Dual Hi-Lo Input Jack

The input jack is designed to make the proper selection between the microphone (requires short input plug) or phonograph (requires long input plug), thus making two input jacks unnecessary.

Extension Speaker Jack

This jack can be used to connect speakers in a remote location. Attachment Cord (See Auxiliary Parts List) can be used for this purpose. The speaker in the recorder is automatically disconnected by inserting the extension plug. Earphones (See Auxiliary Parts List) may be plugged into the jack to monitor microphone recordings.

Motor Switch

Model TR-800D makes a conservative provision for a motor switch which allows the motor to be turned off when using the radio for long periods of time.

OPERATING INSTRUCTIONS

Threading The Tape

1. Place full supply reel of tape (glossy side out i.e. "A" wind) on left spindle and empty reel on right spindle, making sure the reels are fully seated.

2. Unwind about 14" of tape from the supply reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making sure the dull coated side of the tape faces the rear of the recorder. Feed the end of the tape into one of the

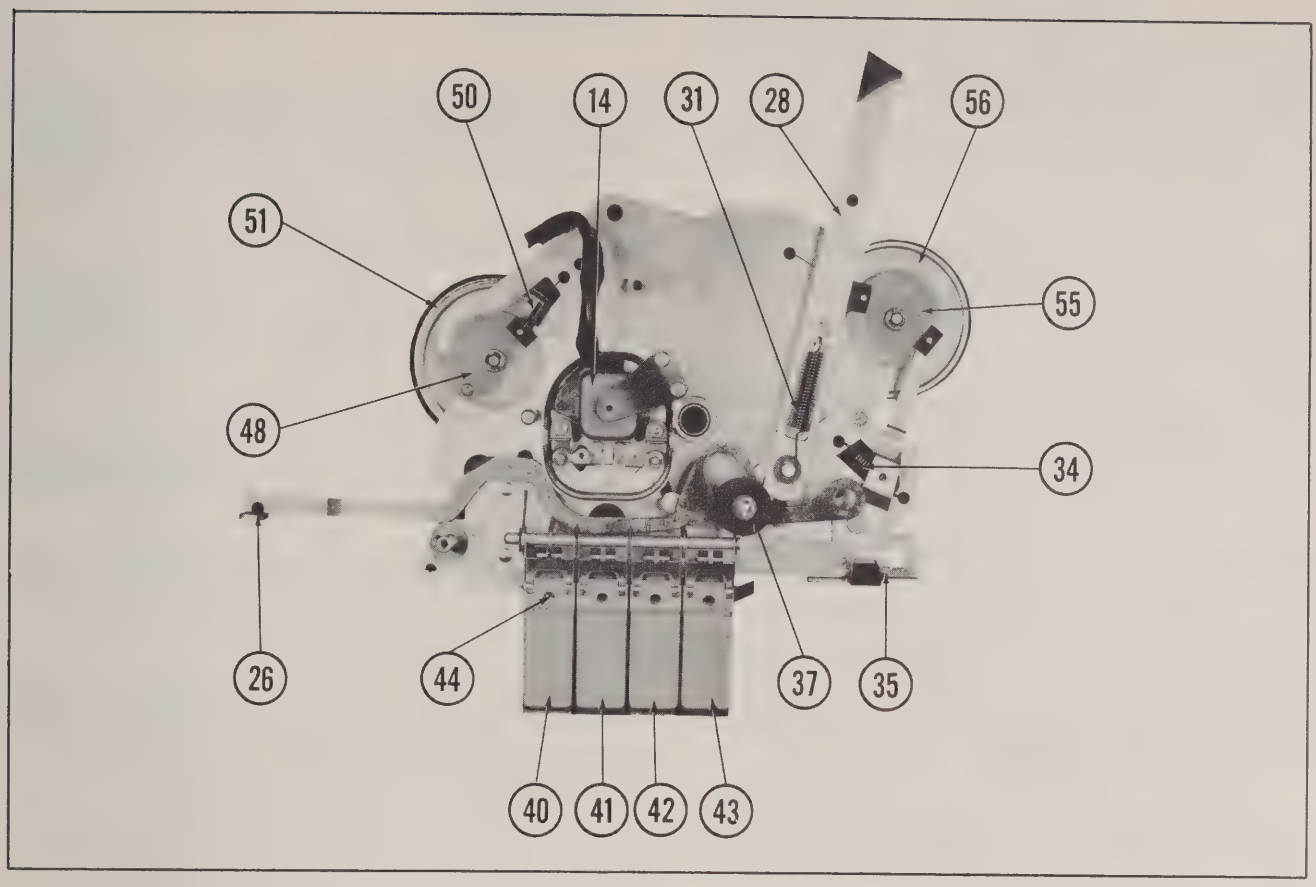


Figure 4

radial slots in the empty reel. Rotate the reel counter-clockwise until the tape is secured and all slack is taken up between reels.

To Record From Microphone

NOTE: The Revere automatic high frequency erase removes previous recorded sound when new material is recorded; therefore, no special step is necessary to erase recordings before new recordings are made.

1. Insert microphone plug firmly into input jack.

2. Turn tone control to treble and while talking into the microphone adjust the volume control until "Normal" indicator flashes and no flashing occurs at the "Distorted" indicator.

3. Set the index counter to zero, slide the record key lock to the right, and depress the record key.

To Record From Radio, T.V. Or Phonograph

1. To Record From Radio or T.V. — Insert Radio Attachment Cord plug into input jack on recorder. Connect the cord clips to the radio or T.V. speaker terminals.

2. To Record From Phonograph — Insert a standard phono plug from the source of a crystal type phonograph into input jack on recorder. If standard phono plug is not used, Attachment Cord may be used.

3. Proceed with recording as described in "To Record From Microphone".

4. If desired, a program can be heard in either "Stop" position or "Record" position by pressing the "Speaker" key. In "Record" position the "Speaker" key can be released by again pressing the "Record" key without disturbing recording.

To Operate Radio-Recorder Combination (Model TR-800D)

1. To Listen To Built-In Radio — Any plug must be removed from input jack. Press "Speaker" key while unit is in "Stop" position. Adjust tone & volume controls to desired levels. Motor switch (M8) may be turned off to conserve mechanism when using radio for long periods.

2. To Record From Built-In Radio — Any plug must be removed from input jack. No external connections are needed. Proceed with recording as described in "To Record From Microphone."

3. When external sources of recording material are used, the built-in-radio will be automatically disconnected by the insertion of respective plug into the input jack.

Twin — Track Recording

1. Revere Recorders are designed so that each reel of tape holds two full length recordings, one on each half of the dull side of the tape.

2. After the first track has been recorded, a second recording can be made on the same tape by removing the reels from the recorder, turning them over, and placing on opposite spindles.

3. Thread the tape and proceed with the recording as previously described.

4. After the second track has been recorded, the first track is ready to be played, without rewinding, by changing reels as described in step No. 2 above.

Splicing And Editing

NOTE: Since it is impossible to edit and splice one "track" without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc., and unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side, and trim off any excess width. Use Scotch #41 tape to prevent "bleeding" of adhesive.

3. For very precise editing, press "Stop" and "Play" keys down together. Turn reels by hand to locate a single word or sound. Cut or mark tape exactly at the right hand pole face by prying up the head cover.

To Play Back Recordings

1. Move rewind knob (7) to the left and wind tape back to the original counter setting. Return the rewind knob to the center position to stop the reels.

2. Press "Play" key and adjust volume and tone to desired level.

Fast Forward

1. Any portion of a recording may be skipped, or any selection may be located in a few seconds by moving the high speed knob (7) to the right. A few seconds of "Fast Forward" is equivalent to several minutes of playing time.

2. By moving knob (7) back and forth the tape can be inched along to an exact point.

3. After reaching the desired portion of the tape, move the high speed knob to the middle or neutral position to stop all tape movement.

Connecting To Hi-Fi Systems

1. The recorder can be connected to Hi-Fi systems by using Revere Hi-Fi cables (See Auxiliary Parts List).

2. To connect for recording, plug a Hi-Fi cable between the recorder's input jack, and the jack of an amplifier marked "Detector", "Tape", "Recorder-Input," or "Pre-Amp. Output".

3. To connect for playing a tape, plug a Hi-Fi cable between the recorder's rear extension speaker jack, and the jack of an amplifier marked "Auxiliary", "TV", "Tuner", or "1V Input".

4. While tape is playing, set the recorder's tone control so the dot is on the first "E" in treble, and set the volume to flash the "Normal" indicator; thereafter, adjust the Hi-Fi amplifier volume and tone to desired listening level.

To Use As Public Address System

1. Insert the microphone plug into the recorder's input jack.

2. Depress "Stop" & "Speaker" keys and adjust volume & tone controls to desired listening level.

TIPS ON RECORDING WITH A MICROPHONE

The "Speaker" key should not be pressed when the microphone is near the speaker, as this will cause feedback & howling. The "Speaker" key should be pressed only when microphone is remotely positioned from the recorder. In recording, the most satisfactory results are obtained when the microphone is held about one foot from the mouth. The microphone should not be placed on the same table with the recorder, or on a piano or radio, as it may pick up vibration and produce a noisy recording. The presetting of the record level with either microphone or radio will be more accurate if the tone control is placed in treble.

DISASSEMBLY INSTRUCTIONS

To Remove Recorder From Case

1. Remove four large Phillips head tapping screws and their respective washers adjacent to each rubber foot on bottom of case.

2. Remove two large Phillips head tapping screws and their respective washers from the back of the case, one on each side of the metal grille.

3. Lift the unit carefully up out of the case. Length of speaker cable permits speaker to remain with case.

4. Unplug speaker cable.

To Remove Top Plate Assembly

1. Remove three machine screws (5) between the reel spindles.

2. Loosen two machine screws, one above the "Input Jack" (M9) and the other above the "Normal" lamp (M3), until the threads of the screws no longer engage. (Screws remain in plastic).

3. Pull up to remove on-off-volume (9) and tone control (10) knobs.

4. Remove screw from high speed knob (7) and remove knob.

5. Remove screw from speed selector knob (8) and remove knob.

6. Release "Record" key lock. Press "Record" key and then move "Record" key lock to the left. Place screwdriver between "Record" lock and plastic top plate. Pry lock to the left and remove top plate.

To Remove Mechanism From Amplifier

1. Disconnect head plug and motor plug.

2. Remove five Phillips head machine screws (5 used in Model TR-800D and 6 Used in Model T-700D) from side plates of amplifier. Lift out mechanism.

PRELIMINARY TESTS — REPAIR PROCEDURE

TEST PROCEDURE: FAILURE TO PASS ANY OF THESE TESTS INDICATES A FAULT THAT SHOULD BE REMEDIED.

1. Remove front and rear plastic head covers by pulling up. Clean head, tape guides, and capstan with alcohol.

2. Press "Stop" key, place high speed knob (7) in the middle or neutral position, and turn power "on".

3. Thread tape on recorder. Brakes should be engaged. Pull required on reel should not distort the tape and should offer sufficient drag to prevent spilling of tape. Drop tape into threading slot. Attach free end to take-up reel (right). Reel should rotate freely counterclockwise and drag when rotated clockwise.

4. Press "Play" key. "Speaker" key should also depress and both should latch down. "Stop" key should release. Reel spindle brakes should release. Solenoid should energize. Felt pressure pads should press square against tape and cover shiny pole face area under tape. Pressure roller (37) should contact capstan, and tape should move past play-record-erase head (14) at playing speed. Take-up reel should wind up tape as it passes the capstan. The counter should tally each revolution of the supply reel.

5. Move high speed knob (7) to the right. Check to see that moving the knob releases "Play" and "Speaker" keys and latches down "Stop" key. Pressure roller and pressure pads should be released. Tape should move forward at greatly increased speed.

6. Return high speed knob (7) to the middle or neutral position. Solenoid and pressure pads should remain disengaged. "Stop" key should remain down. There should be no spilling of tape. If tape spills, see "Stop" Key Adjustment .

7. Move "Record Key Lock" to right. Press "Record" key. Make a microphone recording. Adjust volume control while speaking so that "Normal" indicator flashes and "Distorted" indicator does not.

8. Press "Speaker" key. Speaker should be live. Press "Record" key again. "Speaker" key should release.

9. Move high speed knob (7) to the left. "Record" key should release and "Record Lock" should reset.

10. Play back recording. Check volume, tone and overall quality. Amplification at full volume should be sufficient, on a normally recorded tape, to deliver approximately 5 1/2 watts output.

11. Rewind tape and re-record over previous recording. All trace of previous recording should be erased on the portion of the tape re-recorded. Check irregularities in playing speed (wow and flutter).

MECHANICAL ADJUSTMENTS

"Stop" Key Adjustment

In switching from "Play" or "Record" to "Fast Forward" or "Rewind", if the solenoid does not release pressure roller (37), or if tape is spilled when returning to the neutral position from "Fast Forward" or "Rewind" by the solenoid re-engaging, check the stop key adjustment as follows:

1. Turn "Stop" key adjusting screw (Item 44 Figure 4) a few turns counter-clockwise, then press "Play" key. Move high speed knob (7) to either "Fast Forward" or "Rewind". Turn the "Stop" key adjusting screw (44) clockwise until the electrical function switch (sawtooth latch bar) just latches to the right. Turn an additional 1/4 turn clockwise. If screw is turned too far clockwise the high speed knob (7) will bind.

2. Check "Stop" key micro-switch. Switch is located under the "Stop" key and is encased in fiber. Note: It may be necessary to adjust "Stop" key when replacing amplifier assembly.

Replacing Pressure Pads

Felt pressure pads (See Auxiliary Parts List) may be glued on with household cement without removing pressure pad arms (17 & 19). Pads should cover shiny pole faces of head, and the side of pad touching head should be free of cement.

Replacing Sound Head

1. After removing head spring retainer (11) lift head & brass alignment plate from head shield cup. Unplug head cable plug.

2. Pry head from brass alignment plate. Note position of locating pins.

3. Place the head over the pins in the aligning plate in the proper location and press into place.

4. Replace alignment plate into head cup. The two brass pivot studs should engage the two holes in the plate. Replace head retaining spring.

5. Align head azimuth as described in "Electrical Adjustments".

ELECTRICAL ADJUSTMENTS

Play-Record-Erase Head Azimuth Adjustment

It is very important that the head be lined up perfectly with the tape. If it is not, low output and loss of high frequencies will result. There is one adjustment to be made, which is as follows:

1. For alignment of the play-record-erase head a 1 mil alignment tape should be used. Thread tape on unit and set controls in "Play" position. Adjust head for maximum playback sensitivity by turning adjustment screw (Item 15 on Exploded View). In lieu of alignment tape, play a previously recorded tape and adjust head for maximum treble tone. After adjustment is made, cement alignment screw (15) to lock adjustment.

Bias Adjustment

The bias is measured by placing a 100 ohm resistor in series with the record element and measuring the voltage across this resistor with a meter capable of accurately reading .15 volts at a frequency of 70KC. Adjustment is made by means of the screwdriver adjustment on oscillator coil (L1). This screw is located beneath the name plate on the rear panel. The above value of bias will produce optimum results on most types of standard tape presently available.

Hum Balancing Adjustments

Both "Record" (R2) and "Play-Back" (R3) hum balancing controls are provided to assure maximum signal to noise ratio. These controls have been factory adjusted for optimum performance. If adjustment is required, screwdriver controls are located on the chassis near power transformer (T1). First try reversing the power plug for minimum hum. Then with "Stop" and "Speaker" keys depressed, adjust "Record" hum control (R2) for minimum hum at speaker, volume set at maximum. Next, press "Play" key and adjust the "Play" hum control (R3) for minimum hum at speaker.

CLEANING

The majority of defects, other than wear or breakage, can be traced to dirty surfaces. The play-record-erase head (14), capstan, and pressure roller (37) are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. This accumulation should be periodically removed since it will cause faint recording and poor play-back. Wipe off the above surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen cloth slightly with alcohol.

LUBRICATION

All moving parts are permanently lubricated. Under normal use no further lubrication is necessary. In heavy duty service, the following parts should be lubricated once a year with a drop of #10 motor oil:

1. The top and bottom motor bearings.
2. The top and bottom flywheel (58) bearings.
3. Pressure roller (37) bearings.
4. All idler and drive wheel bearings.
5. The reel spindle bearings.

The basic rule is — do not over lubricate. Oil must be kept off all rubber idlers, belts, and periphery of flywheel and off parts that might transfer oil to them. Always wipe excess lubricant from parts that have been lubricated.

MECHANICAL TROUBLES

Note: Before trouble-shooting any of the below, make sure motor "on-off" switch (used in Model TR-800D only) is in the "on" position.

No Tape Drive In "Play" Or "Record"

1. Pressure roller spring (31) disconnected or broken, resulting in pressure roller (37) not being held in contact with the capstan. Connect or replace spring (31).
2. Motor pulley (93) loose on motor shaft.
3. Idler tension spring (50 or 114) disconnected or broken, thereby not holding idler wheel (51 or 113) in contact with motor pulley (93) and flywheel (58). Connect or replace springs (50 & 114).
4. Take-up belt (59) stretched or not properly connected.
5. Check for oil on motor pulley (93), idler wheels (51 & 113), flywheel (58), and take-up belt (59). If necessary, clean with alcohol. Check for any tape wound around capstan.

No Fast Forward (Check Fast Forward With Nearly Full Take-Up Reel)

1. Check high speed lever (35) to see if it moves approximately 7/8" to the right. This should allow idler wheel (56) to be pulled by its spring (32) into contact with high speed cup (74) and flywheel (58). A weak spring (32), binding slide (55), or bent arm may prevent this.
2. With tape speed selector in 7 1/2 ips position, flywheel idler slide (48) must be free to slide 7 1/2 ips speed idler wheel (51) into contact with motor pulley (93). Check tension on fast speed idler spring (50).

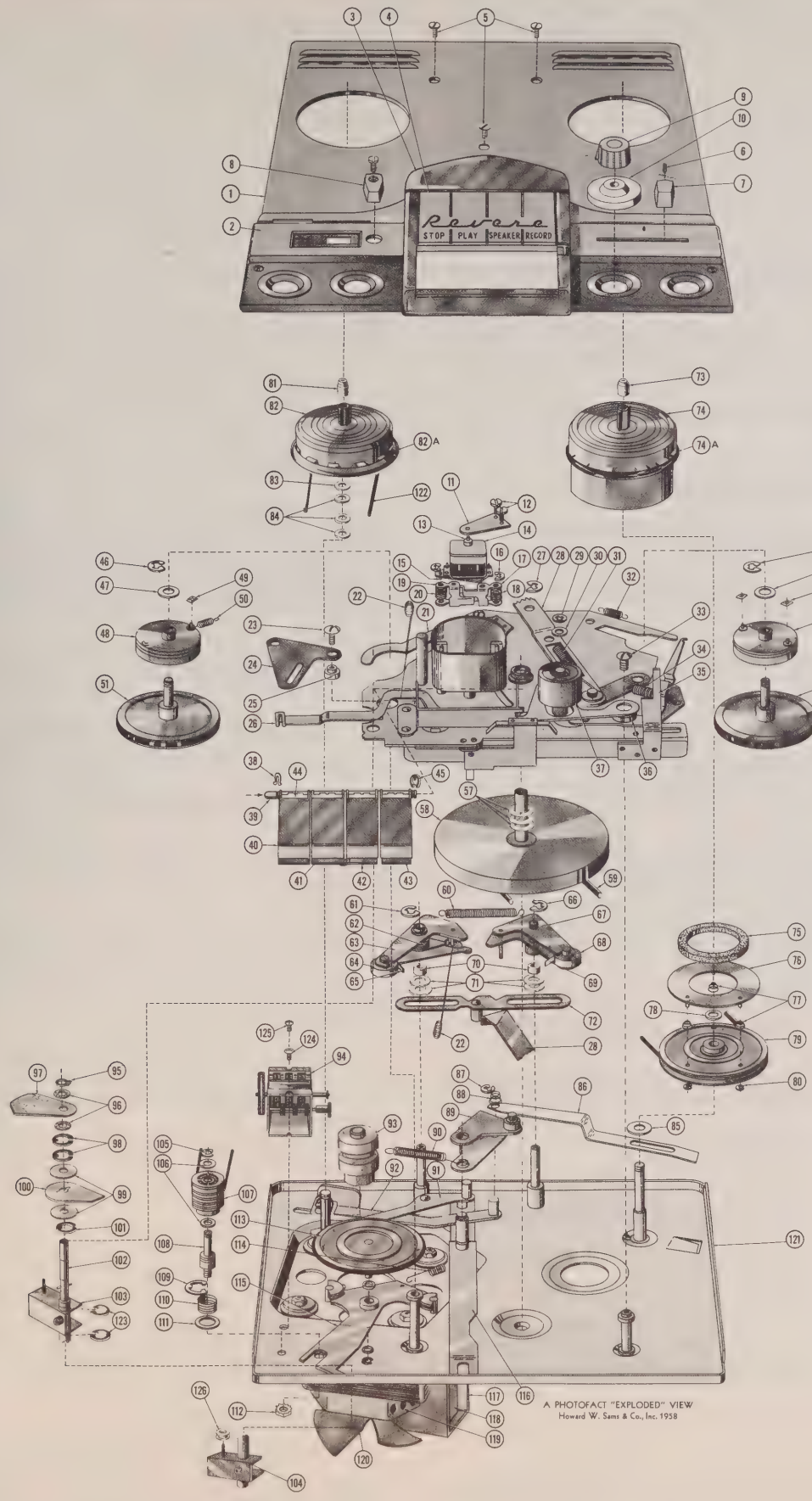


Figure 5. Exploded View Of Tape Transport Mechanism.

3. With tape speed selector in 3 3/4 ips position, 3 3/4 ips idler wheel (113) should make contact with motor pulley (93). Check tension on slow speed idler spring (114).

4. Check for oil on drive surfaces. If necessary, clean with alcohol.

5. Check that pressure pads are disengaged.

No Rewind, OK In Play And Fast Forward

1. High speed lever (35) should move approximately 7/8" to the left. Rubber tire (82A) on supply spindle (82) should contact motor pulley (93).

2. Check take-up spindle for free rotation. Brakes should be disengaged. Idler wheel (56) should not be driving high speed cup (74).

3. Rewind arm spring (90) loose or broken. Replace.

Tape Overruns Or Spills When Changing Functions.

1. Brake arm spring (60) disconnected or broken. Connect or replace spring (60).

2. Brake roller springs (65 or 69) broken. Replace defective spring.

3. Clutch felt (75) may be worn. Replace.

4. Check for grease or oil on all driving surfaces.

Speed Irregularities (Wow And Flutter)

Check for binding in the following:

1. Flywheel bearings. Check by moving flywheel drive idler wheel (51 or 113), depending on which speed is selected, and fast forward idler wheel (56) away from the flywheel; rotate the capstan by hand. A small drag is normally obtained from belt (59).

2. Pressure roller (37).

3. Check all idler and drive wheel bearings.

4. Check left and right reel spindles. The brakes should be disengaged or held away before turning spindles.

5. Motor bearings. Check by turning shaft by hand.

Check to see that:

1. Supply reel is free to rotate and is not scraping top plate.

2. Rubber tire (82A) on supply spindle touches motor pulley (93) only when in "Rewind" position.

3. Brakes are released.

4. Pressure roller (37) is making good contact with capstan.

5. Capstan is clean.

Check for irregularities:

1. Idler wheel surfaces.

2. Pressure roller (37) surface.

3. Take-up tension. Take-up clutch can be checked by holding right spindle while recorder is in "Play" position. The tension should be smooth without any pulsations. If surface of take-up clutch felt (75) is gummy, it must be replaced.

Insufficient Tape Take-Up

1. Increase take-up by adding another washer (85).

2. Clutch felt (75) may be worn. Replace clutch felt.

Tape Squeak

Tape squeak is caused by faulty tape with insufficient lubrication. Tape squeaking is accentuated by high temperature and humidity. Squeaking can be minimized by:

1. Cleaning head and pressure pads with alcohol.

2. Slightly decreasing pressure pad spring (18 or 20) tension.

FUNCTION SWITCH OPERATION (ELECTRICAL)

"Stop" Key (40) Pressed

Power to solenoid (118) interrupted, second stage of 12AX7 (V1B) pre-amplifier circuitry connected to input jack, and output transformer (T2) secondary open.

"Play" Key (41) Pressed

"Play-Record Coil" connected to first stage of 12AX7 (V1A) pre-amplifier circuitry. "Speaker" key automatically actuated with "Play" key, connecting output transformer (T2) secondary to speaker. Tone control (R1B) operating.

"Speaker" Key (42) Pressed

Connect secondary of output transformer to speaker for public address in "Stop" position, or monitoring in "Record" position.

"Record" Key (43) Pressed

"Play-Record Coil" connected to amplifier output, bias-erase oscillator circuit functioning and tone control disconnected. If "Speaker" key is pressed, output is muted with 10Ω resistor (R34), and monitoring of recording may be accomplished. Record level indicators (M3) and (M4) operate in all functions.

Weak Playback Volume Or No High Frequencies

1. Check for dirty head (14). Clean head with alcohol. (The plastic head cover is removed by pressing below the word "Revere" and then prying up.)

2. Check pressure pads.

3. Wrong type of tape or wind. (Dull side of tape should be wound "in" — "A" wind.)

4. Check head azimuth adjustment.

5. Head may be worn badly or need replacement (See Replacing Sound Head).

Recorder Dead, Pilot Light (M2) Off

1. Check fuse (M1). Cause of blown fuse may be shorted 6X5GT (V5) or unit plugged into D.C. or 220VAC.

2. Check power transformer (T1) for short or open.

3. Check power cord and "on-off" switch on volume control (R1A).

Public Address Volume Weak, Distorted, Or Dead ("Stop" And "Speaker" Keys Depressed)

1. Try another microphone, radio, etc., to see whether the input source is defective.

2. Check all tubes and voltages indicated on schematic diagram.

3. Connect an audio generator to the grid of each stage to isolate the area of fault.

Dead Playback, Appears To Operate Properly In Record, Level Indicators Operating

1. First half of 12AX7 (V1A) defective (R7) open, or defective function switch contacts.

2. Check extension speaker jack, speaker socket, & speaker.

3. Check for short in input grid shield wiring.

4. Check for defective head.

Weak Or Distorted Record, Playback On Pre-Recorded Tape OK

1. Check bias-erase oscillator coil (L1) secondary for approximately 40V @ 35KC in Model TR-800D and 80V @ 65KC in Model T-700D.

2. Check input jack. Normal speech 1 ft. from microphone should flash the "Normal" indicator.

3. Check microphone or other input source. Failure to push plug firmly all the way into jack will cause distortion. Microphone must have special short plug in order to contact high gain input circuit.

Recording Level Indicators Inoperative, Records And Plays Properly

1. If indicators (M3) & (M4) are dead, lamps may be loose, or (C16), (C17), (R23), or (R25) open.

2. If lamp or lamps always glow, (C16),(C17), or (R22) may be shorted, (R24) or (R26) open, or amplifier may be oscillating.

Solenoid Does Not Actuate Pressure Roller (37) In "Play" Or "Record"

1. If using remote controls, check remote switch and cable connections.

2. Check on-off-switch on volume control (R1A) and fuse (M1).

3. Check "Stop" key micro-switch.

4. Check fiber arm on "Stop" key blade of push-button switch.

5. Check mechanism linkage for binding.

6. Check solenoid.

Records Background Hum, Hum Lower On Pre-Recorded Tape

1. Check all stages after the first and 6K6GT (V4) for heater to cathode leakage; also check (C1) & (C2).

2. Record from another microphone etc., to see whether hum comes from an outside source.

3. Adjust "Record Hum" control (R2) for minimum hum with "Stop" and "Speaker" keys depressed.

Hum In Playback, Lessens With Decrease In Volume Control

1. Check first stage of 12AX7 (V1A). Adjust "Play Hum" control (R3) for minimum hum.

2. Move recorder away from hum fields such as fluorescent lamps, amplifiers, etc.

Microphonic Howl In "Play", But Dies Out When Volume Is Lowered

1. Try different 12AX7 (V1) in preamplifier stage.

No Erase, Records Over Previous Recordings

1. Check for dirt on erase head element and check pressure pads.

2. Check bias-erase oscillator coil (L1) as discussed previously under "Weak Or Distorted Record." Check 6K6GT (V4) bias oscillator.

3. Check erase head coil for open or short.

Excessive Erase, Tape Burns When Remote Control Is Used

1. Adjust bias for 1.5 volts or less (see page 9, "Bias Adjustment").

No Sound, Neon Lamps Flashing With Signal

1. Check speaker switch and speaker.
2. Check speaker jack switch contact.
3. Check transformer (T2) secondary for open.
4. Check connecting cables, jacks, plugs, etc.

FM, TV Or Amateur Interference

This is heard as a raspy unsteady buzz or cross modulation by voice or music. Add a 10K (1/2 watt) resistor in series with each grid of 12AX7 (V1), directly between tube socket grid terminals and other input components.

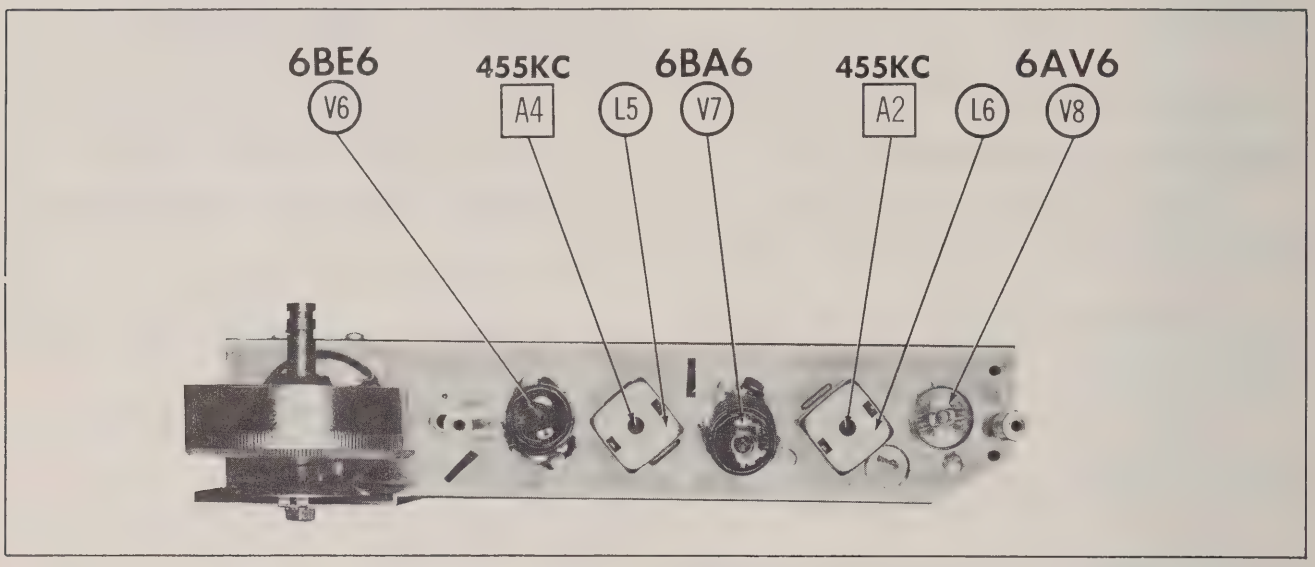
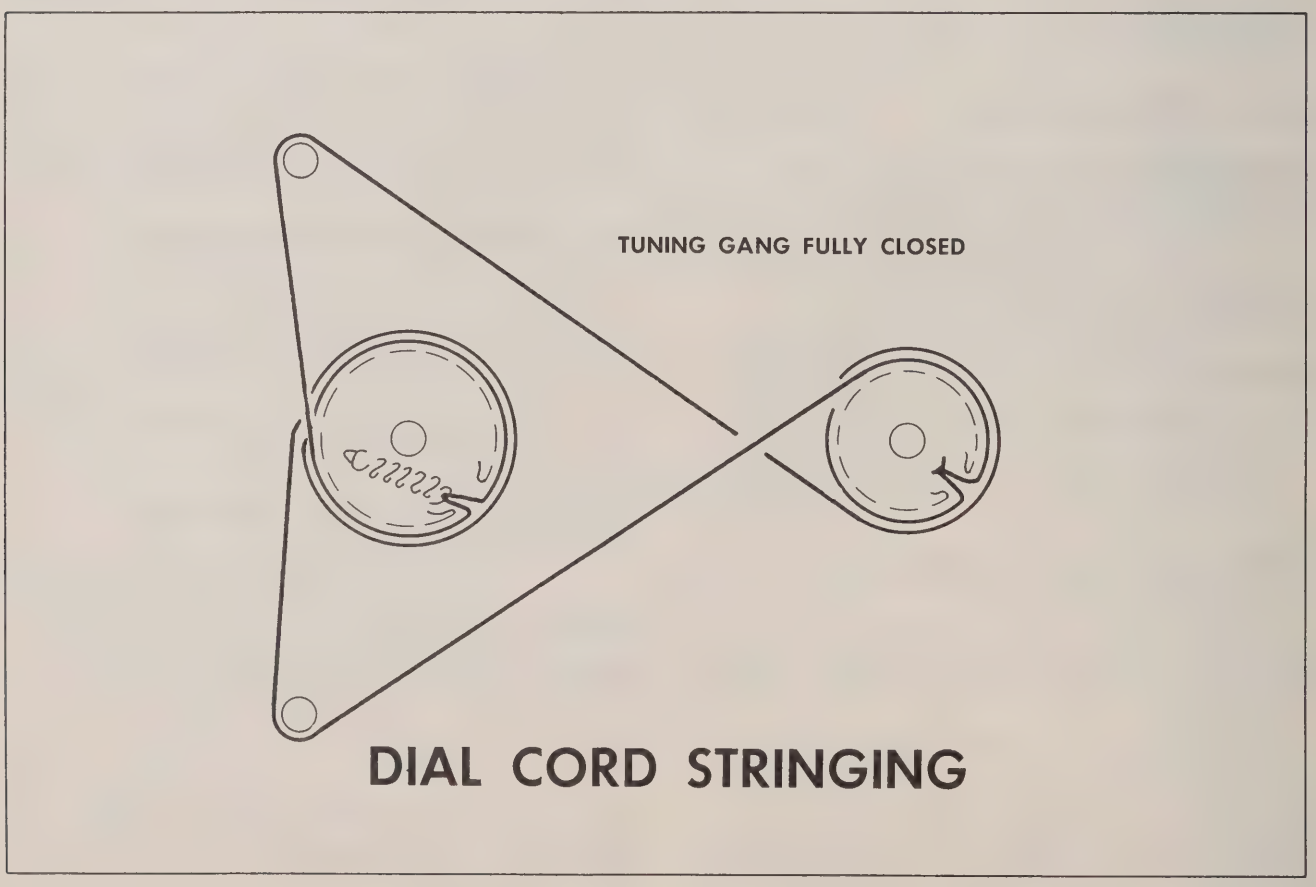


Figure 6. Top View — Radio Tuner



ALIGNMENT INSTRUCTIONS – READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed; the last index mark on the dial drum should be opposite the index mark on top plate of recorder.

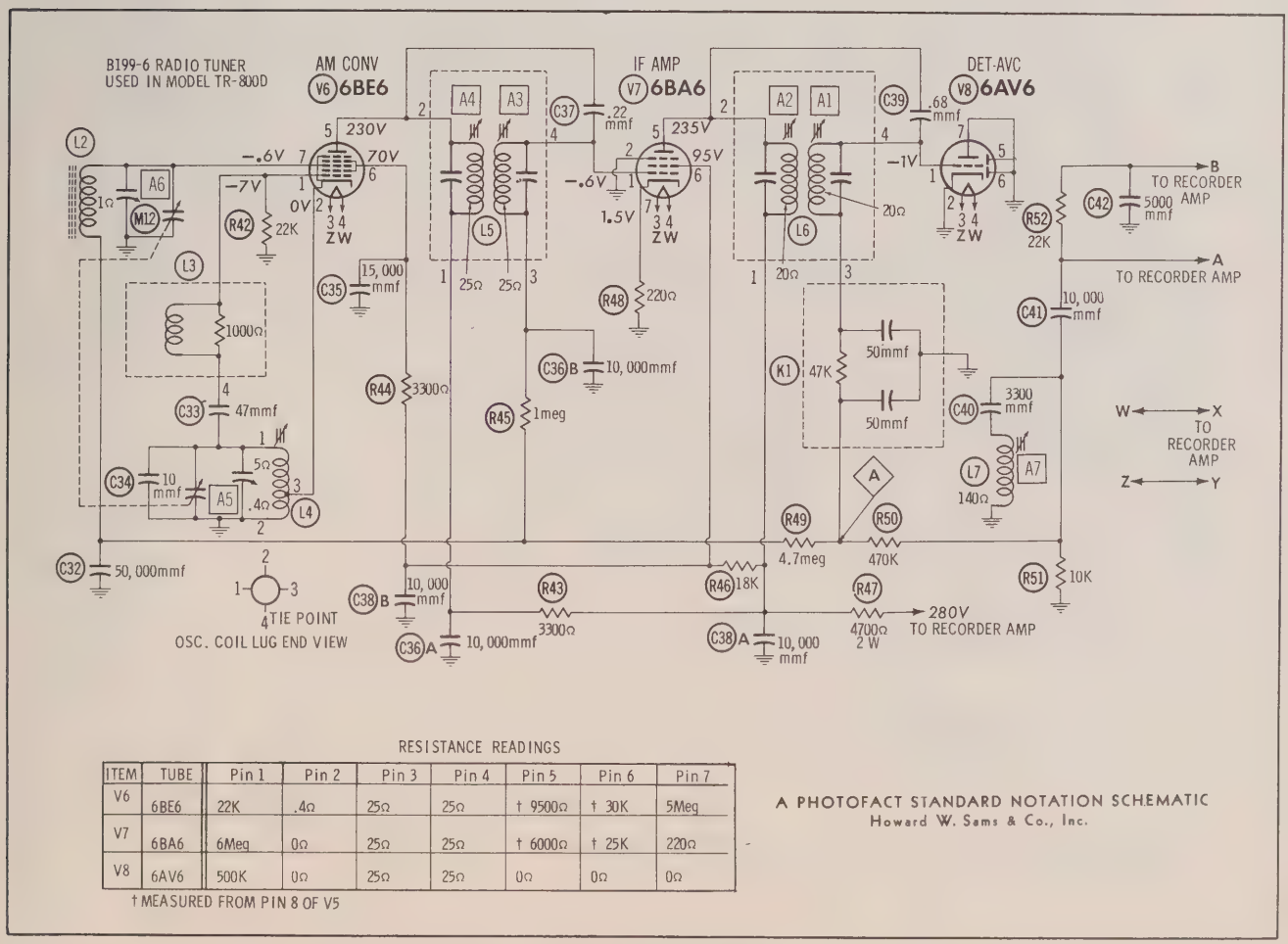
With "Stop" & "Speaker" keys depressed and volume control at maximum, maintain a signal generator level to obtain .3 volts across a 3 ohm resistor plugged into the extension speaker jack; remove resistor after level is obtained and proceed with alignment as follows: Note: Any plug must be removed from input jack.

TRADE NAME	Revere Model TR-800D
MANUFACTURER	Revere Camera Co., 320 East Twenty-First Street, Chicago 16, Ill.
TYPE SET	AC Operated Tape Recorder With AM Tuner
TUBES (Eight)	Types 12AX7 Preamplifier, 6AU6 AF Amplifier, 6V6GT Output, 6K8GT Bias Osc., 6X5GT Rectifier, 6BE6 AM Conv., 6BA6 AM IF Amp., 6AV6 Det.-AVC
POWER SUPPLY	105-120 Volts AC-60Cycles RATING .55 Amp. @117 Volts AC (56 Watts)
TUNING RANGE—BROADCAST	540KC to 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 6BE6(V6) Low side to chassis.	455KC (400% Mod.)	Tuning Gang fully open.	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.	"	"	1620KC (400% Mod.)	"	"	A5	"
3.		Loop	1500KC (400% Mod.)	Tune to 1500KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of of receiver. Adjust for maximum output.
4.	01mfd	High side to point A Low side to chassis.	10KC		"	A7	Adjust for MINIMUM output.



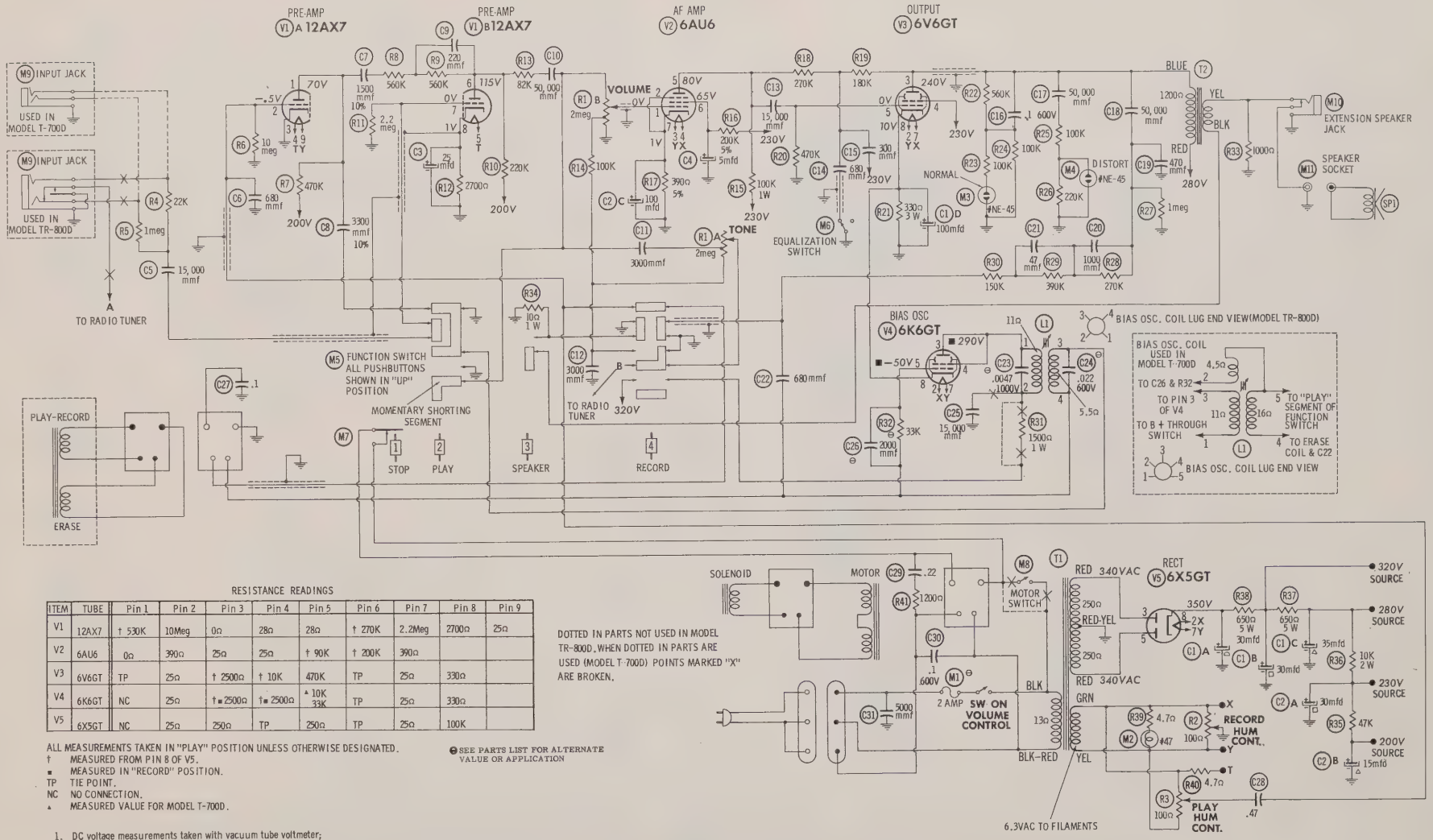
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V6	6BE6	22K	.4Ω	25Ω	25Ω	† 9500Ω	† 30K	5Meg
V7	6BA6	6Meg	0Ω	25Ω	25Ω	† 6000Ω	† 25K	220Ω
V8	6AV6	500K	0Ω	25Ω	25Ω	0Ω	0Ω	0Ω

† MEASURED FROM PIN 8 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc.

Schematic – Radio Tuner



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	† 530K	10Meg	0Ω	28Ω	28Ω	† 270K	2.2Meg	2700Ω	25Ω
V2	6AU6	0Ω	390Ω	25Ω	25Ω	† 90K	† 200K	390Ω		
V3	6V6GT	TP	25Ω	† 2500Ω	† 10K	470K	TP	25Ω	330Ω	
V4	6K6GT	NC	25Ω	†■2500Ω	†■2500Ω	▲10K 33K	TP	25Ω	330Ω	
V5	6X5GT	NC	25Ω	250Ω	TP	250Ω	TP	25Ω	100K	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 8 OF V5.
■ MEASURED IN "RECORD" POSITION.
TP TIE POINT.
NC NO CONNECTION.
▲ MEASURED VALUE FOR MODEL T-700D.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DOTTED IN PARTS NOT USED IN MODEL TR-800D. WHEN DOTTED IN PARTS ARE USED (MODEL T-700D) POINTS MARKED "X" ARE BROKEN.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Pre-Amplifier	12AX7	
V2	AF Amplifier	6AU6	
V3	Output	6V6GT	
V4	Bias Osc.	6K6GT	

ITEM No.	USE	TYPE	NOTES
V5	Rectifier	6X5GT	
V6	Converter	6BE6	
V7	IF Amplifier	6BA6	
V8	Det. -AVC	6AV6	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	REVERE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲ 30	450	A119-4	AFHU-82	C0300	FP376.7		Q-405	R2621 *
B	■ 30	450			BR2501	TC2501		MT-4530	
C	▲ 35	400							
D	100	25							
C2A	■ 30	350	A119-3	AFH3-112-20	C0220			D-395	R2620 *
B	▲15	300			BBR100-16			MTH-0610	
C	100	6							
C3	25	25	A116-2	PRS25V25	BBR25-25	TC26	TD-25-25	MT-0225	TVA-1205
C4	5	300	A118-2	PRS350V4	BR435	TC60	TD-4-450	MT-4504	TVA-1601

*Non Catalog Item

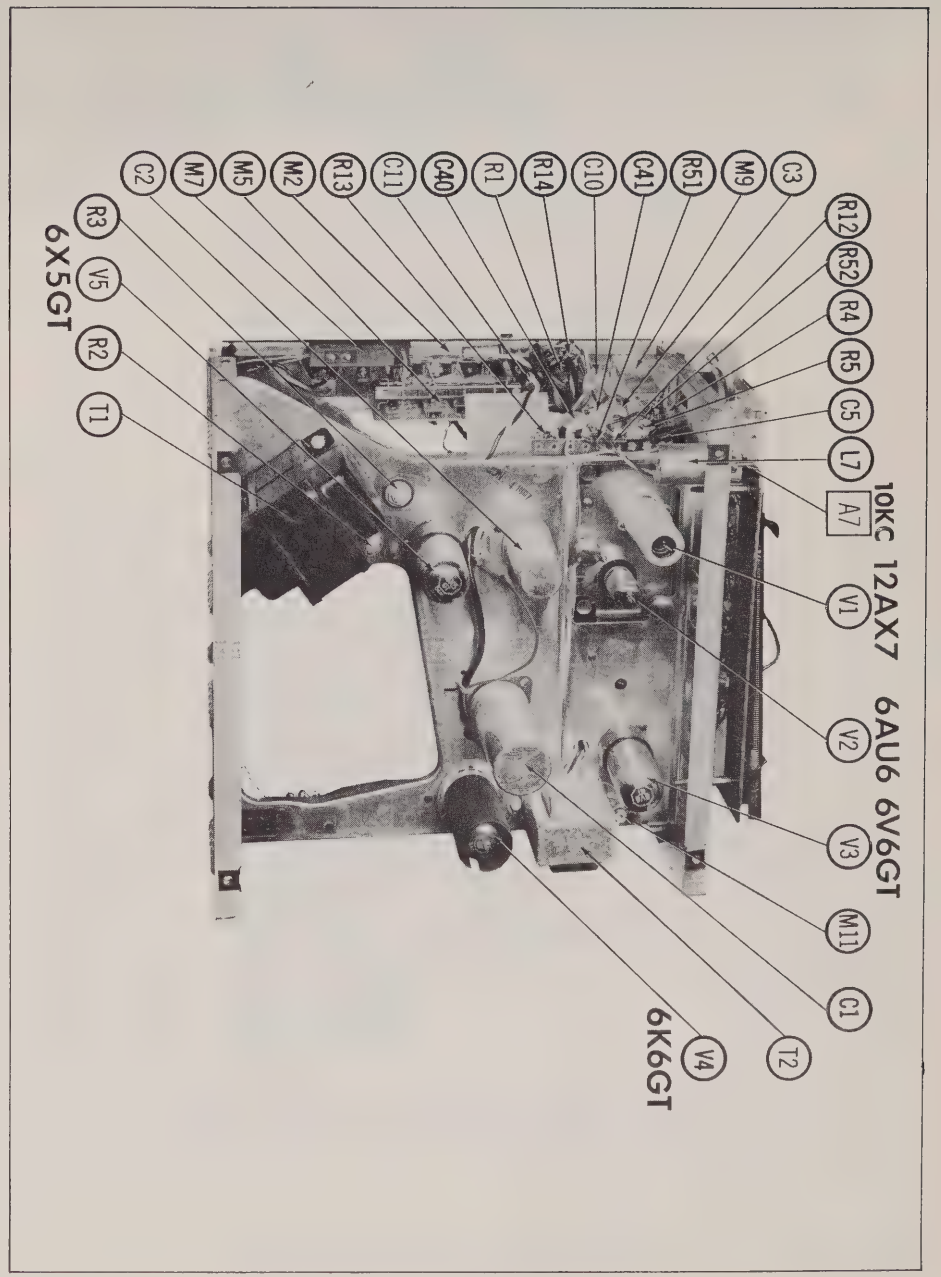
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	REVERE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	15000		B114-2	BPD-015	DD16-153	BYA10S15	ED-015		5HK-S15	
C6	680		B112-6	SI680	D6-681	LT6T68	GP-680	UC-5368	5GA-T68	
C7	1500		B113-10			1R5D15	ED-1500		MS-215	10%
C8	3300		B113-9			1R5D33	CY20C332K		MS-233	10%
C9	220		B112-3	SI220	D6-221	LT6T22	GP-220	UC-5322	5GA-T22	
C10	50000		B114-11	BPD-05	DF-503				TG-S50	
C11	3000		B113-4	DI-003	DD-302	BYA10D3	ED-003	UC-523	5GA-D3	
C12	3000		B113-4	DI-003	DD-302	BYA10D3	ED-003	UC-523	5GA-D3	
C13	15000		B114-2	BPD-015	DD16-153	BYA10S15	ED-015		5HK-S15	
C14	680		B112-6	SI680	D6-681	LT6T68	GP-680	UC-5368	5GA-T68	
C15	300		B112-4	DI-0003	DD-301	L10T3	ED-300	UC-533	5GA-T3	
C16	.1	600	B115-2	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C17	50000		B114-11	BPD-05	DF-503				TG-S50	
C18	50000		B114-11	BPD-05	DF-503				TG-S50	
C19	470		B112-5	BPD-00047	DD-471	L10T47	ED-470	UC-5347	5GA-T47	
C20	1000		B113-1	BPD-01	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C21	47		B111-2	BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	
C22	680		B112-6	SI-680	D6-681	LT6T68	GP-680	UC-5368	5GA-T68	
C23	.0047	1000	B113-7	P1088N-0047		CUB10D47		GEM-10247	10TM-D47	1
C24	.022	600	B114-3	P688N-022	DD-203	CUB6S22	ED-02	GEM-6122	6TM-S22	1
C25	15000		B114-2	BPD-015	DD16-153	BYA10S15	ED-015		5HK-S15	2
C26	2000		B113-2	BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	3
C27	.1	200	B115-1	P288N-1	DF-503	CUB2P1		GEM-201	2TM-P1	
C28	.47		B110-1							
C29	.22	400	B115-3	P488N-22		CUB4P22		GEM-4022	4TM-P22	
C30	.1	600	B115-2	P688N-1	DF-104	CUB4P1		GEM-601	6TM-P1	
C31	5000		B113-8	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C32	50000		B114-11	BPD-05	DF-503				TG-S50	
C33	47		B111-2	BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	
C34	10		B111-3	BPD-00001	DD-100	L10Q1	ED-10	UC-541	5GA-Q1	
C35	15000		B114-2	BPD-015	DD16-153	BYA10S15	ED-015		5HK-S15	
C36A	10000		B114-9	BPD-2X01	DDM-103	BYD6DS1	ED-01	DC511	5HK-2S1	Dual
C36B	10000						ED-01	DC511		
37	.22		B110-2							
C38A	10000		B114-9	BPD-2X01	DDM-103	BYD6DS1	ED-01	DC511	5HK-2S1	
C38B	10000						ED-01	DC511		Dual
C39	.68		B110-3		TCZ-R68		TC0-.68			
C40	3300		B113-9	BPD-0033	DD-332	BYA10D33	ED-0033	UC-5233	5GA-D33	
C41	10000		B114-1	BPD-01	DD-102	BYA6S1	ED-01	DC511	5HK-S1	

1. T-700D uses 2000mmf Mica in this application Part # B113-3
Not used in T-700D Model
T-700D uses 10000mmf Disc in this application Part # B114-1

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REVERE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	B140-6	F1-74				Tone Tap ⓐ 200K
R1B	2 meg	½		R2-72				
C	Switch			KB-1*				
R2A	100Ω	2	A140-7	WN-101	A43-100		R100L	Record Hum Control Wire Wound
B	Shaft			Not Req.	FKS-1/4		Not Req.	
R3A	100Ω	2	A140-7	WN-101	A43-100		R100L	Play Hum Control Wire Wound
B	Shaft			Not Req.	FKS-1/4		Not Req.	

*Use KR-1 on Red Label Control Only

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REVERE PART No.	NOTES
	OHMS	WATT		
R4	22K		B103-7	
R5	1meg		B105-1	
R6	10meg		B105-5	
R7	470K		B104-10	
R8	560K		B104-11	
R9	560K		B104-11	
R10	220K		B104-5	
R11	2.2meg		B105-2	
R12	2700Ω		B102-5	
R13	82K		B103-15	
R14	100K		B104-1	
R15	100K	1	B104-18	
R16	200K 5%		B104-15	
R17	390Ω 5%		B101-8	
R18	270K		B104-16	
R19	180K		B104-17	
R20	470K		B104-10	
R21	330Ω	3	A106-8	
R22	560K		B104-11	
R23	100K		B104-1	
R24	100K		B104-14	
R25	100K		B104-14	
R26	220K		B104-5	
R27	1meg		B105-1	
R28	270K		B104-16	

ITEM No.	RATING		REVERE PART No.	NOTES
	OHMS	WATT		
R29	390K		B104-7	
R30	150K		B104-4	
R31	1500Ω	1	B102-4	①
R32	33K		B103-8	②
R33	1000Ω		B102-1	
R34	10Ω	1	B100-2	
R35	47K		B103-9	
R36	10K	2	B103-3	
R37	650Ω	5	A106-9	
R38	650Ω	5	A106-9	
R39	4.7Ω		B100-1	W.W.
R40	4.7Ω		B100-1	W.W.
R41	1200Ω		B102-3	
R42	22K		B103-7	
R43	3300Ω		B102-10	
R44	3300Ω		B102-10	
R45	1meg		B105-1	
R46	18K	2	B103-13	
R47	4700Ω	2	B102-11	
R48	220Ω		B101-2	
R49	4.7meg		B105-3	
R50	470K		B104-9	
R51	10K		B103-2	
R52	22K		B103-7	

①Not used in T-700D Model
②T-700D uses a 10K in this application Part #B103-2

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	REVERE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .55A	680VCT ⓐ .058A	6.3V ⓐ 3.2A		B130-3					

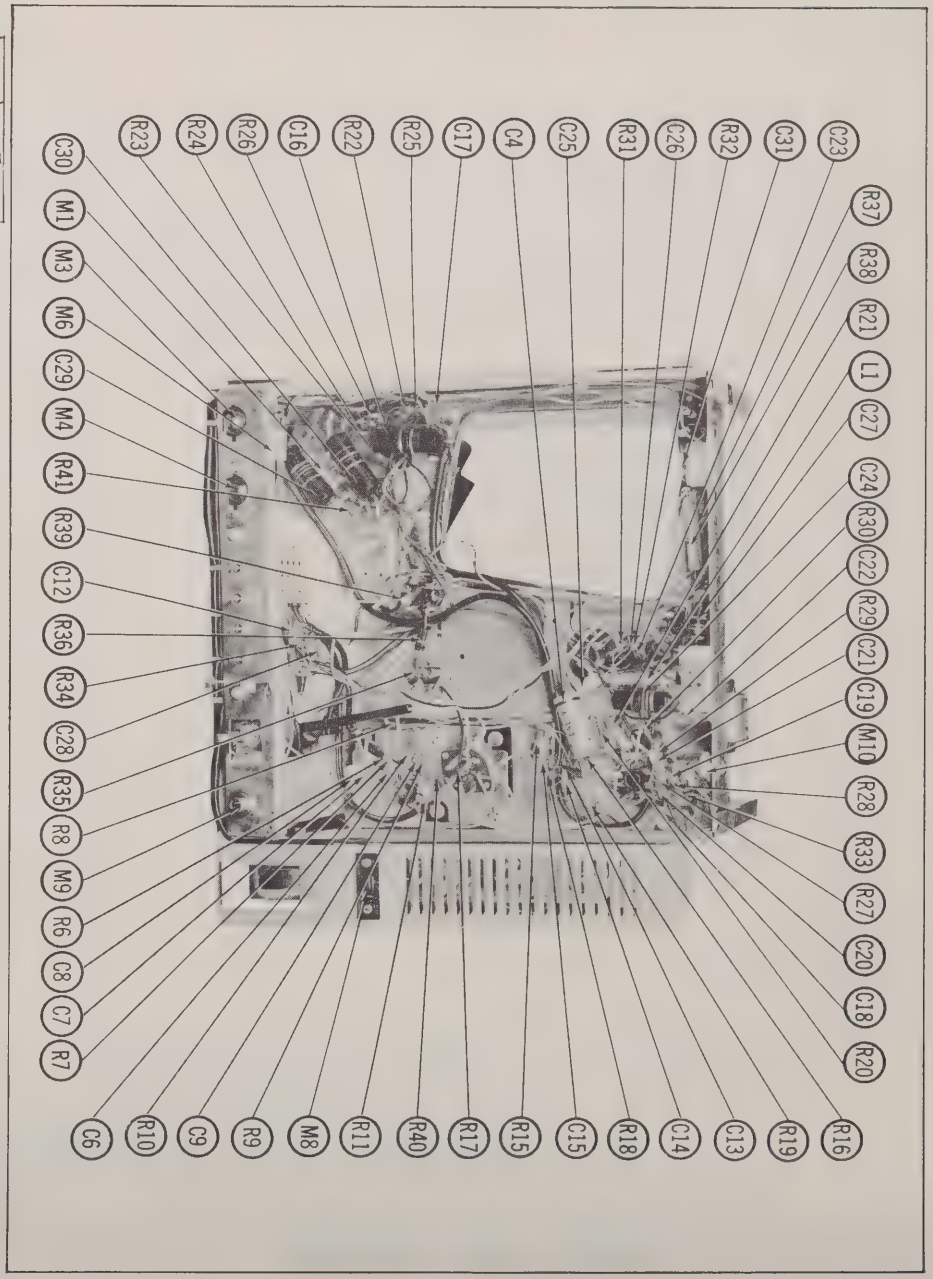
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	REVERE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7300Ω	3-4Ω	A-131-4	Z1113 ①	A-3020	AU-602①	A-3878 ①	26S48	S-9Z	①Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REVERE PART No.	QUAM PART No.	
SP1	6 x 9	PM	3-4Ω	B-160-3	69A3	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		REVERE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	A132-7					
	Bias Osc.	A132-2					Model T-700D
L2	Loop Stick	A133-6					
L3	RF Choke	A133-4					Wound On 1K resistor
L4	Osc. Coil	A132-9			70-Osc. *		
L5	Input IF	A132-4	16-6758	BC-352	12-C1	RF-1	
L6	Output IF	A132-5	16-6758	BC-353	12-C2	RF-2	
L7	10KC Filter	A133-5					
	Tuning Cap	A142-1					(Ant) 23-220uuf (osc)14-132uuf

*Disregard Primary

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	REVERE PART No.	REPLACEMENT DATA	
K1	Diode RF Filter	50mmf, 50mmf 47K	A177-5	Aerovox	PA-99
				Centralab	PC-52
				Cornell Dubilier	111TM3
				Erie	1403-03
				Sprague	D-3

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			REVERE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A125V S/B	A176-3		315002.		MDV2	
	3AG①	1 6/10A 125V S/B①	A176-2①		31501.6 ①		MDV 1 6/10 ①	

① Fuse for Model T-700D

MISCELLANEOUS

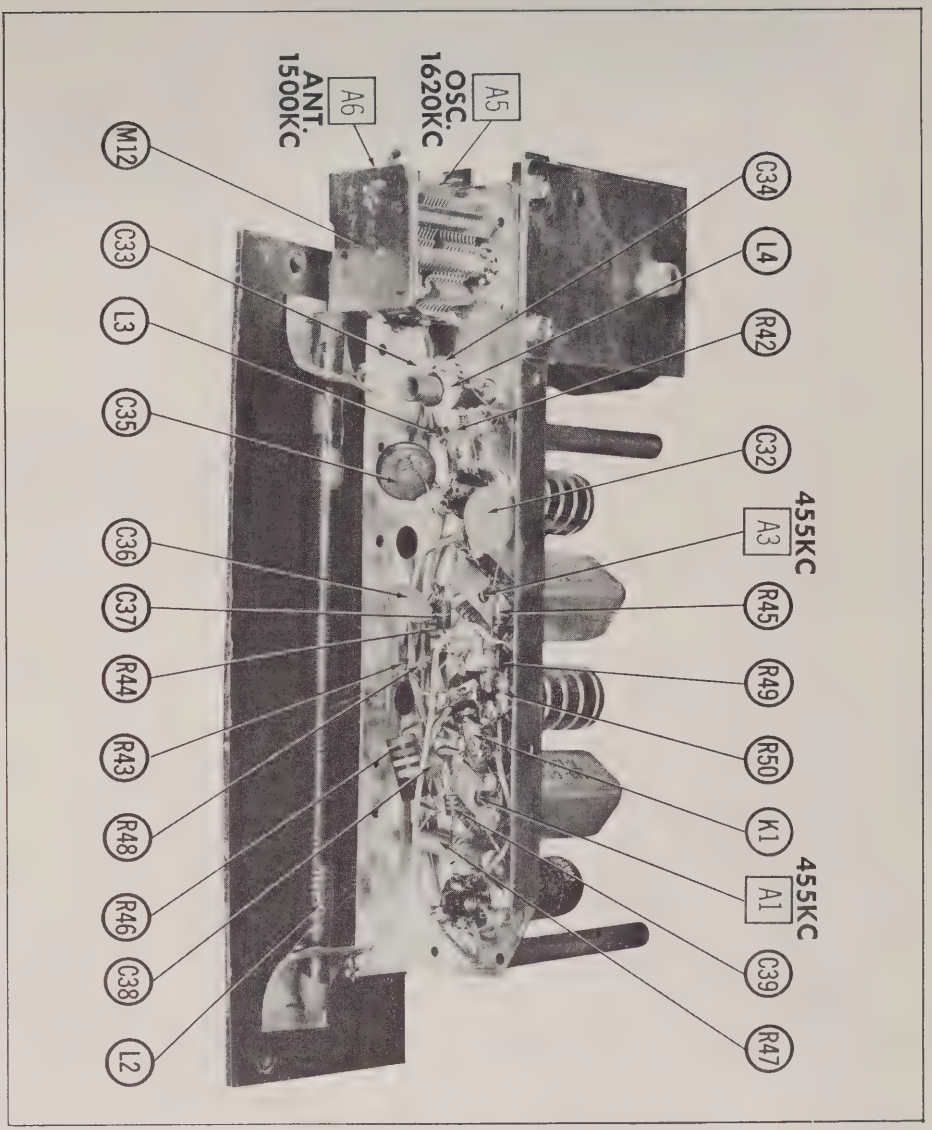
ITEM No.	PART NAME	REVERE PART No.	NOTES
M2	Lamp	A121-1	Pilot Light, #47
M3	Neon Bulb	A121-2	"Normal" Indicator, NE-45
M4	Neon Bulb	A121-2	"Distort" Indicator, NE-45
M5	Switch	B141-3	Slide Type, Function
M6	Switch	A141-12	Leaf Type, Equalization
M7	Switch	A141-2	Leaf Snap Type, "Stop"
M8	Switch	A141-17	Slide Type, Motor On-Off, Model TR-800D Only
M9	Jack	A174-20	Input, Model TR-800D
	Jack	A174-10	Input, Model T-700D
M10	Jack	A174-5	Extension Speaker
M11	Socket	A174-8	Speaker Socket
M12	Tuning Cap.	A142-1	2-Gang Variable, Ant. 23-220mmfd, Osc. 14-132mmfd.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	TR-7006	High Speed
Knob	A2-12328	Speed Control
Knob	TR-7005	Volume
knob	TR-7004	Tone

CHASSIS—BOTTOM VIEW



WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
	TR-7907	Top Cover Assembly: Consists Of:
1		TR-7106D Top Stamped Cover
2		A15-12311 Top Plastic Plate
3		A15-14008 Head Cover, Rear
4		TR-7002 Head Cleaning Cover
5	TR-7251	Pan Head Screw, #6-32 x 7/32
6	TR-7427	Screw, #4-40
7	TR-7006	Knob, High Speed
8	A2-12328	Knob, Speed Control
9	TR-7005	Knob, Volume
10	TR-7004	Knob, Tone
11	TR-7150	Head Spring Retainer
12	TR-7425	Screw, #4-40 (Bind. Head)
13	TR-7249	Head Spring Insulating Stud
14	C-161-1	Play-Record-Erase Head
15	TR-7429	Head Alignment Screw
16	TR-7520	"E" Ring
17	TR-7916	Erase Pressure Pad Assembly
18	TR-7615	Erase Pad Spring
19	TR-7915	Record Pressure Pad Assembly
20	TR-7610	Record Pad Spring
21	R1-14042	Upper Mechanism Plate Sub-Assembly
22	A13-14090	Instant Stop Spring
23	A14-14556	Screw, #8-32 (Truss Head)
24	A3-12375	7 1/2 ips Idler Actuating Cam
25	A4-11229	Link Spacer
26	B3-12312	Instant Stop Arm
27	A9-11888	"E" Ring
28	TR-7117	Spring Arm
29	TR-7521	"E" Ring
30	TR-7517	Washer
31	TR-7601	Pressure Roller Spring
32	TR-7616	Rapid Forward Idler Spring
33	A14-14556	Screw, #8-32 (Truss Head)
34	A13-11203	Pressure Roller Arm Spring
35	TR-7932	High Speed Cam Assembly
36	TR-7267	Instant Stop Arm Bushing
37	A-30-14068	Pressure Roller
38	TR-7526	Grip Ring, 3/16" Shaft
39	TR-7239	Key Shaft
40	TR-7937	Stop Key Assembly
41	TR-7938	Play Key Assembly
42	TR-7939	Speaker Key Assembly
43	TR-7940	Record Key Assembly
44	TR-7420	Stop Key Adjusting Screw
45	A9-11888	"E" Ring, 3/16" Shaft
46	A9-11888	"E" Ring, 3/16" Shaft
47	TR-7517	Phenol Washer
48	B-1-14506	Flywheel Idler & Slide Assembly
49	A9-10960	Speed Nut
50	TR-7605	Idler Drive Spring
51	A1-12424	Idler Assembly (7 1/2 ips)
52	A9-11888	"E" Ring, 3/16" Shaft
53	TR-7517	Phenol Washer
54	A9-1060	Speed Nut
55	B1-14509	Idler Slide Group, Rapid Forward
56	B1-14135	High Speed Idler Assembly
57	A8-10472	Flywheel Thrust Washer
58	A1-12423	Capstan & Flywheel Assembly
59	TR-7809	Take-Up Belt
60	A13-14111	Brake Arm Spring
61	A9-12315	1/4" Grip Ring
62	A13-14076	Brake Hold Lever Spring
63	A1-14095	Left Brake Arm Assembly
64	A15-14064	Nylon Brake Roller

Ref. No.	Part No.	Description
65	A13-14077	Brake Roller Leaf Spring
66	A19-12315	1/4" Grip Ring
67	A1-14096	Right Brake Arm Assembly
68	A15-14064	Nylon Brake Roller
69	A13-14077	Brake Roller Leaf Spring
70	A4-14074	Brake Arm Spacer
71	TR-7513	Flat Washer
72	B3-14133	Rear Slide Cam
73	A15-14087	Spindle Cap
74	A1-14516	Spindle Cup & High Speed Drum Assembly
74A	A30-11094	Spindle Cup Tire
75	TR-7817	Take-Up Clutch Felt
76	TR-7110	Clutch Plate
77	TR-7617	Clutch Plate Spring
78	TR-7504	Phenol Washer
79	A1-14515	Take-Up Pulley Assembly
80	TR-7520	"E" Ring, 1/8" Shaft
81	A15-14087	Spindle Cap
82	A1-14520	Rewind Spindle Assembly
82A	A30-11094	Spindle Cup Tire
83	TR-7504	Phenol Washer
84	A8-10472	Nylon Washer
85	TR-7514	Flat Washer, Steel
86	TR-7115	Take-Up Clutch Lever
87	A9-11888	"E" Ring 3/16" Shaft
88	TR-7607	Spring
89	TR-7912	Toggle Arm Assembly
90	TR-7604	Rewind Arm Spring
91	A1-14109	Rewind Spindle Arm Assembly
92	TR-7911	Solenoid Arm Assembly
93	A4-12393	Motor Pulley
94	R9-11100	Tape Counter
95	A13-14077	1/4" Grip Ring
96	TR-2658	Felt Washer
97	B12-12314	Speed Indicator
98	A9-12670	"E" Ring, 1/4" Shaft
99	TR-7514	Flat Washer, Steel
100	A3-14044	Switch Actuating Cam
101	A9-12670	"E" Ring, 1/4" Shaft
102	A4-12313	Speed Control Shaft
103	A1-12355	7 1/2 ips Actuating Cam
104	A1-12355	3 3/4 ips Actuating Cam
105	A9-11888	"E" Ring, 3/16" Shaft
106	TR-7504	Phenol Washer
107	A15-14000	Tape Counter Worm Gear
108	A4-12408	Worm Gear Shaft
109	A9-1329	"E" Ring, 3/8" Shaft
110	A13-14481	Compression Spring
111	SP-3541	Flat Washer
112	A9-11184	Hex Nut (Keps)
113	A1-12424	Idler Assembly (3 3/4 ips)
114	TR-7616	3 3/4 ips Idler Spring
115	A3-12379	3 3/4 ips Idler Slide
116	B3-11196	Slide Cam Connector Arm
117	TR-7910	Solenoid Bracket Assembly
118	TR-7803	Solenoid (105-120 Volt)
119	C1-10083	Motor (110 Volt, 60 Cycle)
120	TR-7157	Motor Fan
121	C1-14031	Lower Mechanism Plate Sub-Assembly
122	A30-11101	Tape Counter Drive Belt
123	A9-12089	"C" Washer
124	A14-14556	Screw, #8-32 (Truss Head)
125	A14-14556	Screw, Phillips Head
126	A15-12406	Cam Roller Guide

AUXILIARY PARTS LIST

Part No.	Description
A196-10	Hi-Fi Connecting Cable
A196-8	Attachment Cord
TRA-1102	Adaptor Cord Assembly
TF-702	Remote Foot Control
TH-701	Remote Hand Control
TRA-1104	Control Extension Cord
TRA-1256	Microphone Extension Cord Assembly
A173-1	Microphone Plug
B195-4	Power Cord Assembly

Part No.	Description
C162-1	Microphone Assembly
TR-2601	Spare Pressure Pads
TE-401	Earphones
TR-7411	Screws, Recorder to Case Mounting (6 Used)
TR-7516	Washers, Recorder to Case Mounting
TR-7419	Screws, Tape Mechanism to Amplifier Assembly Mounting (5 or 6 Used)

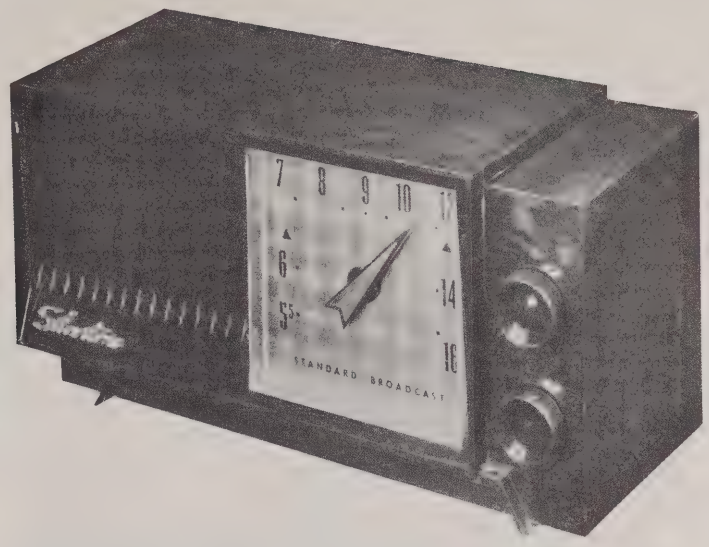
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE MODELS 8005, 8006, 8007 (Ch. 132.42700)

SILVERTONE MODELS 8005, 8006, 8007 (Ch. 132.42700)

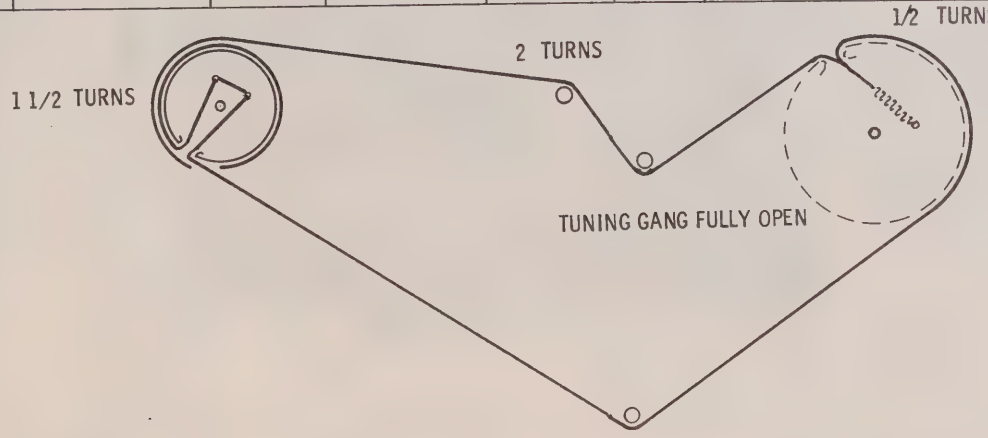


TRADE NAME	Silvertone Models 8005, 8006, 8007, (Ch. 132.42700)
MANUFACTURER	Sears, Roebuck and Co., 925 S. Homan Ave., Chicago, Illinois.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 DET.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .28Amp. @117 Volts AC (28 Watts)
TUNING RANGE—BROADCAST	540-1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B	455KC (400~ mod)	Tuning Gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1640KC	Tuning Gang fully open.	Across voice coil.	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	1400KC	Across voice coil.	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 and 3.



SILVERTONE MODELS 8005, 8006, 8007 (Ch. 132.42700)

SET 395 FOLDER 14

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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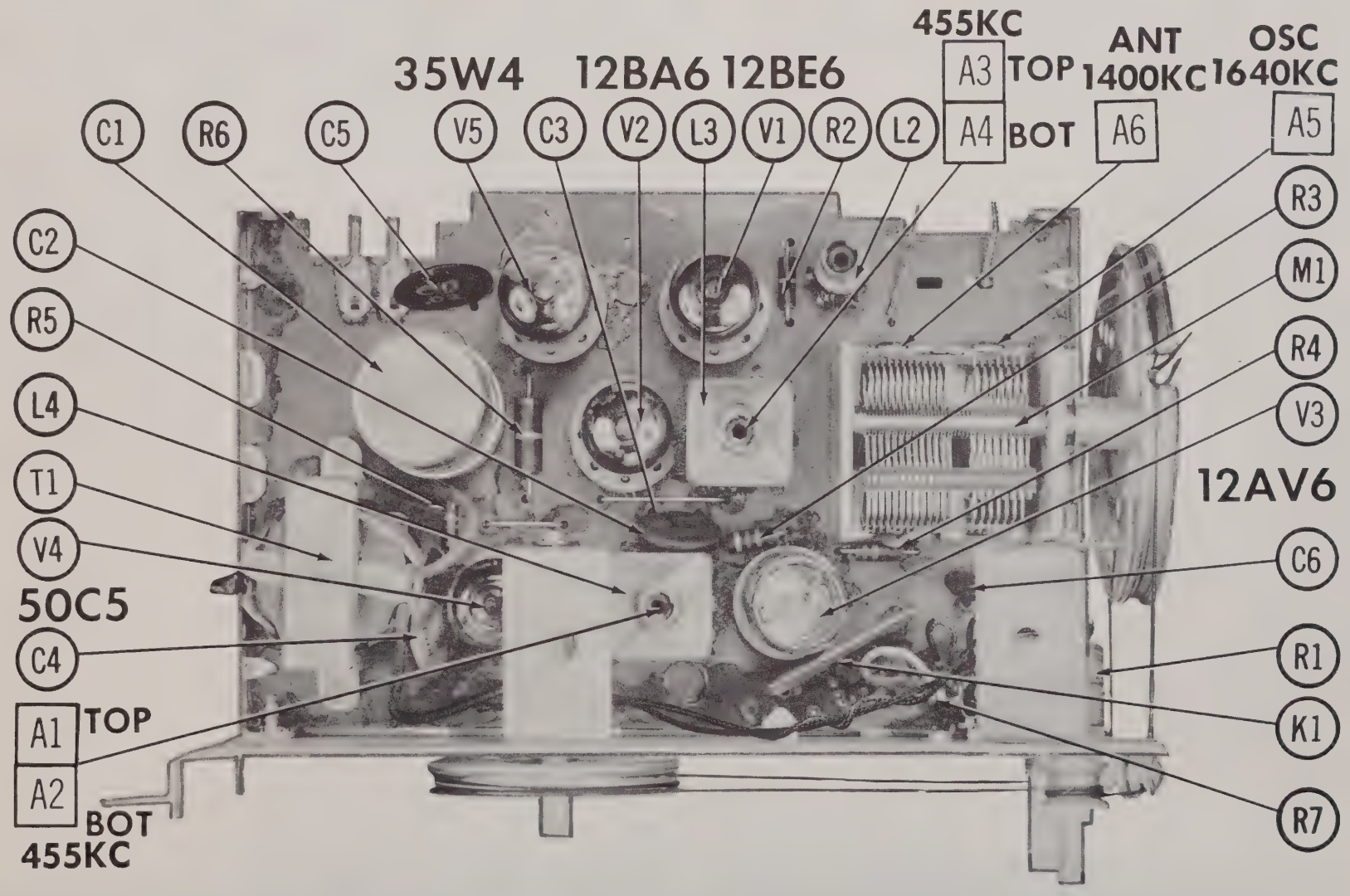


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	DET-AVC-AF Amplifier	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 50	150	43672	AFH2-15-05	BBRD5315	PFP213.1	TDLD-8	MTD-301	R2230 *
B	▲ 30	150							

* Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	20000		43674-2	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	N2200
C3	150		43957-2							
C4	10000		43674-1	BPD-01	DD-103	BYB6S1	ED-01	DC511	5HK-S1	
C5	20000		43674-2	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C6	20000		43674-2	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	43745	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	

RESISTORS

All wattages 1/2 watt, or less. unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R2	22K		43687-223	
R3	47K		43687-473	
R4	2.2meg		43687-225	
R5	120Ω		43689-121	
R6	1200Ω	1	43688-122	
R7	330K		43687-334	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2900Ω	3-4Ω	42700-13	Z1101	A-3025	A-3332	24S53	S-12X	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	25756-2	5A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Ant.	44955-1					Includes Cabinet back and Line Cord
L2	Osc. Coil	43644-1					
L3	Input IF	44282-1	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	44282-1	16-6780	BC-357	13-PC10	RF-4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	5000mmf, 5000mmf, 220mmf, 250mmf, 470K, 470K, 6.8meg	43743-1	Aerovox Centralab Sprague	PA-512 PC-158 DT-5

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Tuning Cap	43987	2 Gang (Ant. 20-350mmf)

CABINETS & CABINET PARTS

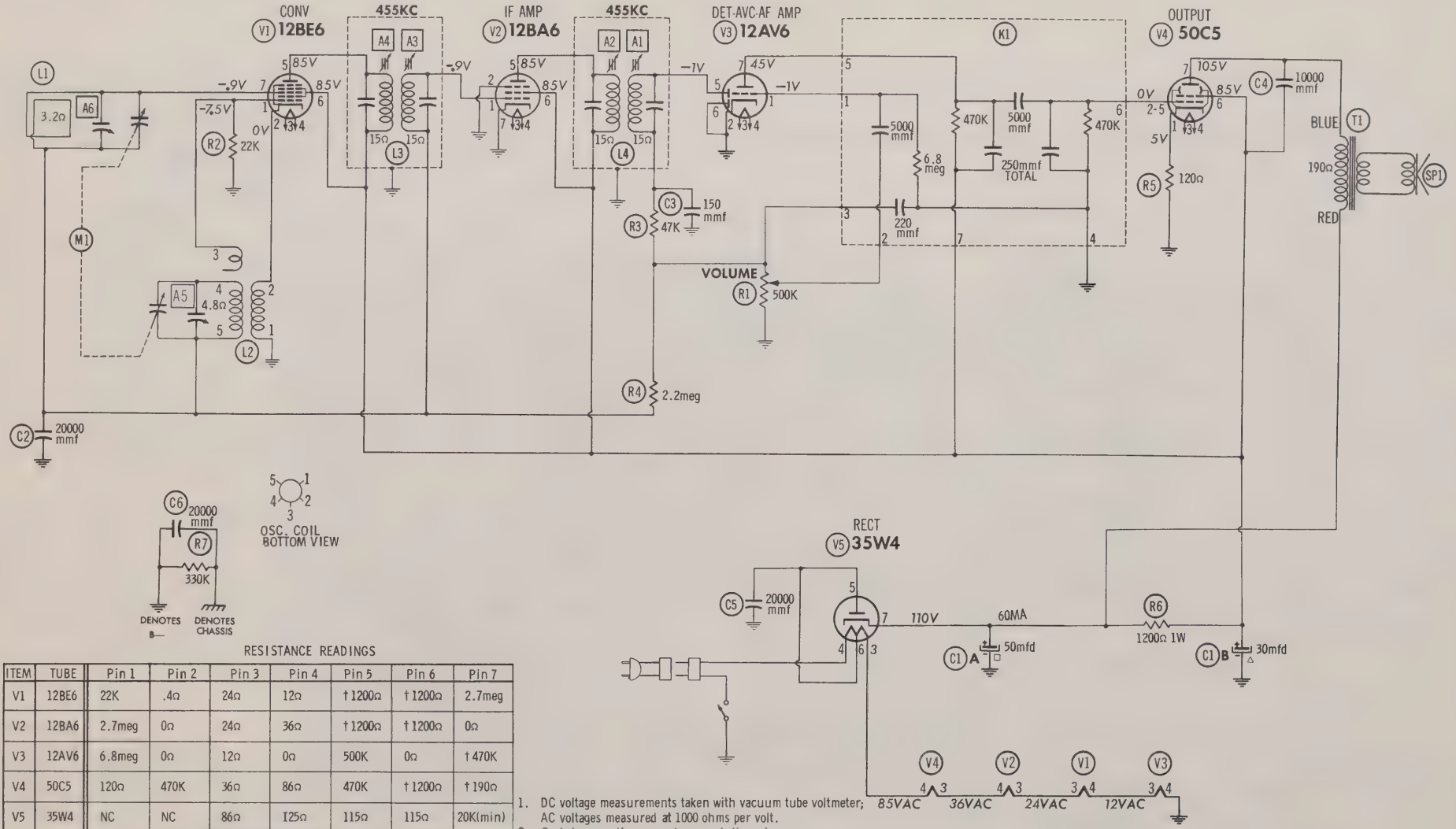
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	44889-48	On-Off-Volume and Tuning; Brown, Model 8005
Knob	44889-17	On-Off-Volume and Tuning; Ivory, Model 8006
Knob	44889-66	On-Off-Volume and Tuning; Green, Model 8007
Cabinet	44966-48	Brown, Model 8005
Cabinet	44966-17	Ivory, Model 8006
Cabinet	44966-66	Green, Model 8007
Dial Crystal	44895	
Dial Pointer	44897	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.4Ω	24Ω	12Ω	†1200Ω	†1200Ω	2.7meg
V2	12BA6	2.7meg	0Ω	24Ω	36Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	120Ω	470K	36Ω	86Ω	470K	†1200Ω	†190Ω
V5	35W4	NC	NC	86Ω	I25Ω	115Ω	115Ω	20K(min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SPARTAN CHASSIS
CR-729AA, CR-729BA

SPARTAN CHASSIS
CR-729AA, CR-729BA

SPARTAN CHASSIS
CR-729AA, CR-729BA

TRADE NAME	Spartan Chassis CR-729AA, CR-729BA
MANUFACTURER	Spartan Div., 2131 Bueter Road, Fort Wayne 4, Indiana
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	4 Volts DC
RATING	9MA @ 4 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5mfd	High side to base of X1. Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A5	"
4.		"	535KC	Tuning gang fully closed	"	A6	"

SET 395 FOLDER 15

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G607R2

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N172	Converter		2N140			
X2	2N145	1st IF Amplifier		2N218			Note 1
X3	2N147	2nd IF Amplifier		2N218			Note 1
X4	310	AF Amplifier		2N109	2N132		
X5	2N185	Output		2N109	2N131		Note 2
X6	2N185	Output		2N109	2N131		Note 2

Note 1. Chassis CR-729AA may use type 2N146 for X2 and X3. Chassis CR-729BA may use type R03 for X2 and X3. Some versions of chassis CR-729BA may use type R02 for X2 and type R04 for X3.
Note 2. Chassis CR-729AA use type 352 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SPARTAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	50	10	270559-5	XPP6V50	EC50-10	TAP25-10	ML40-6		TE-1095
C2	10	10	270559-3	XPP6V10	EC10-6		ML10-6		TE-1087
C3	50	10	270559-5	XPP6V50	EC50-6		ML40-6		TE-1095
C4	50	10	270559-5	XPP6V50	EC50-6		ML40-6		TE-1095
C5	50	10	270559-5	XPP6V50	EC50-6		ML40-6		TE-1095

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SPARTAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	.05	200	250753-1						TG-S50	
C7	10000		250756-1	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	16		250175-46							Note 1
C9	05	200	250753-1							
C10	10000		250756-1	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	Note 2
C11	.05	200	250753-1							
C12	50000		250753-1							
C13	10000		250756-1	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C14	10000		250756-1	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C15	18									Note 3
C16	5000		250753-3	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	Note 4
C17	100000								TG-P10	Note 2

Note 1. Chassis CR-729BA use 10mmf in this application (Part #250175-45).
Note 2. Not used in chassis CR-729BA.
Note 3. Chassis CR-729BA use 22mmf in this application.
Note 4. Some versions may use 10000mmf in this application (Part #250756-1).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SPARTAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	220662-1					Volume & Switch

RESISTORS

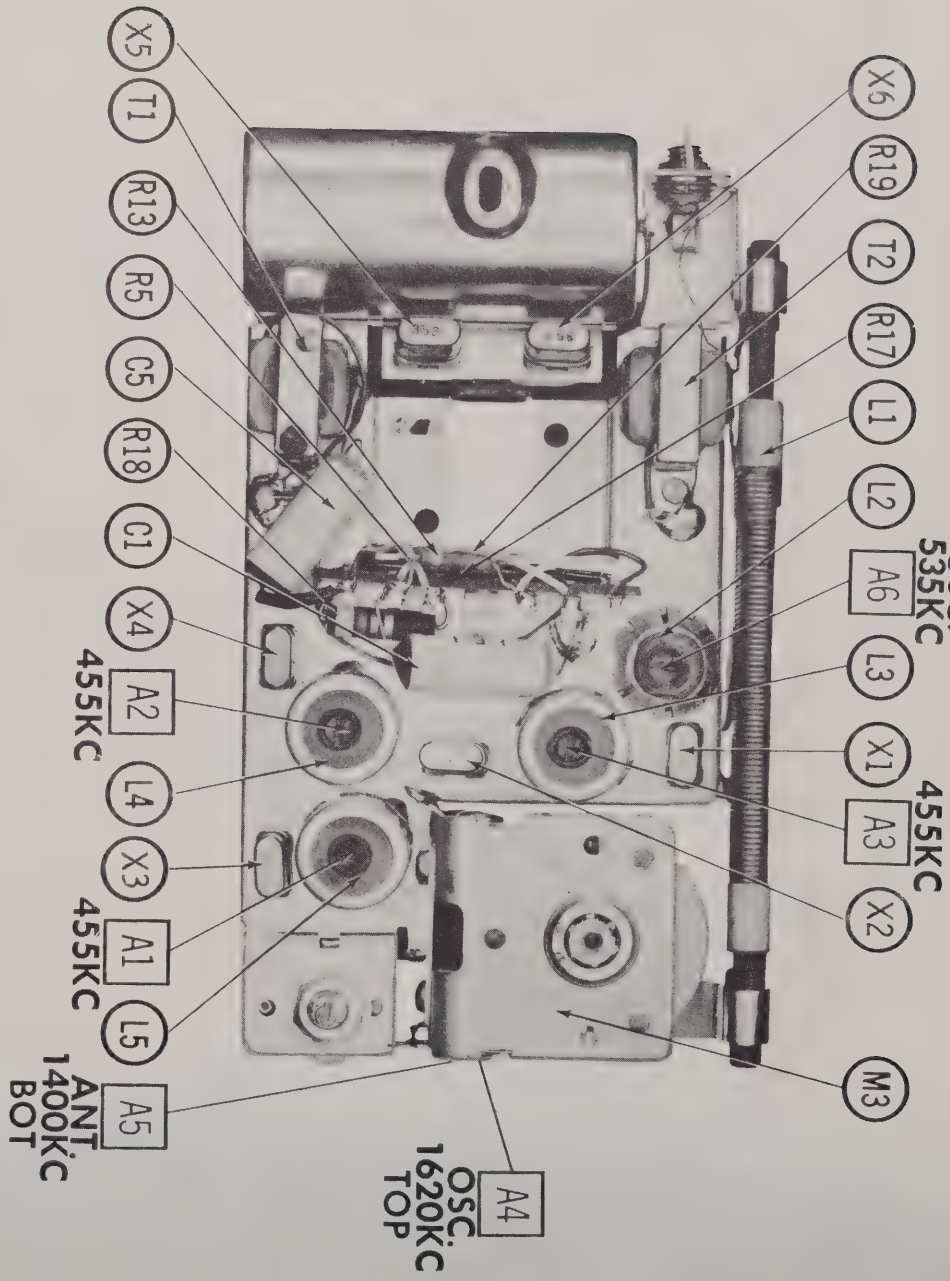
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SPARTAN PART No.	NOTES
	OHMS	WATT		
R2	100K		230702-143	
R3	220K		230702-146	Note 1
R4	1500Ω		230702-123	
R5	39K		230702-138	
R6	220Ω		230702-114	Note 1
R7	220Ω		230702-114	
R8	4700Ω		230702-128	
R9	1000Ω		230702-122	
R10	5600Ω		230702-129	
R11	330Ω		230702-116	

ITEM No.	RATING		SPARTAN PART No.	NOTES
	OHMS	WATT		
R12	6800Ω			Note 2
R13	3300Ω		230702-126	
R14	5600Ω		230702-129	
R15	2200Ω		230702-124	
R16	470Ω		230702-118	
R17	100Ω		230702-110	Note 3
R18	4.7Ω 5%		230109-3	
R19	100Ω		230702-110	
R20	15K		230702-133	Note 4
R21	15K		230702-133	Note 4

Note 1. Not used in chassis CR-729BA.
Note 2. Some versions may use 5600Ω in this application (Part #230702-129).
Note 3. Chassis CR-729BA use 68Ω in this application (Part #230702-108).
Note 4. Not used in chassis CR-729AA.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA SPARTAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1.7 :	1	320813-1				TR-4 ①		① Fabricate mounting.
	Resistance 245Ω	39.5Ω CT							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SPARTAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	650Ω	16Ω	320816-1				TR-20 ①		① Fabricate mounting.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SPARTAN PART No.	QUAM PART No.	NOTES
SP1	2 3/4"	PM	16Ω	580352-1		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SPARTAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Stick	461512-1				
L2	Osc. Coil	361225-1				
L3	1st IF Trans.	320814-1				
L4	2nd IF Trans.	320814-1				
L5	3rd IF Trans.	320815-1				

BATTERIES

ITEM No.	VOLTAGE	SPARTAN PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	RAY-O-VAC "A"	RAY-O-VAC "B"	NOTES
M1	4V	530043-1			E233		TR-233R				

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA SPARTAN PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M2	1N295	530553-1	1N60	1N60	Audio Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SPARTAN PART No.	NOTES
M3	Tuning Cap.	260606-1	2 Gang (Ant. 19-220mmf, Osc. 23-120mmf)

CABINETS & CABINET PARTS

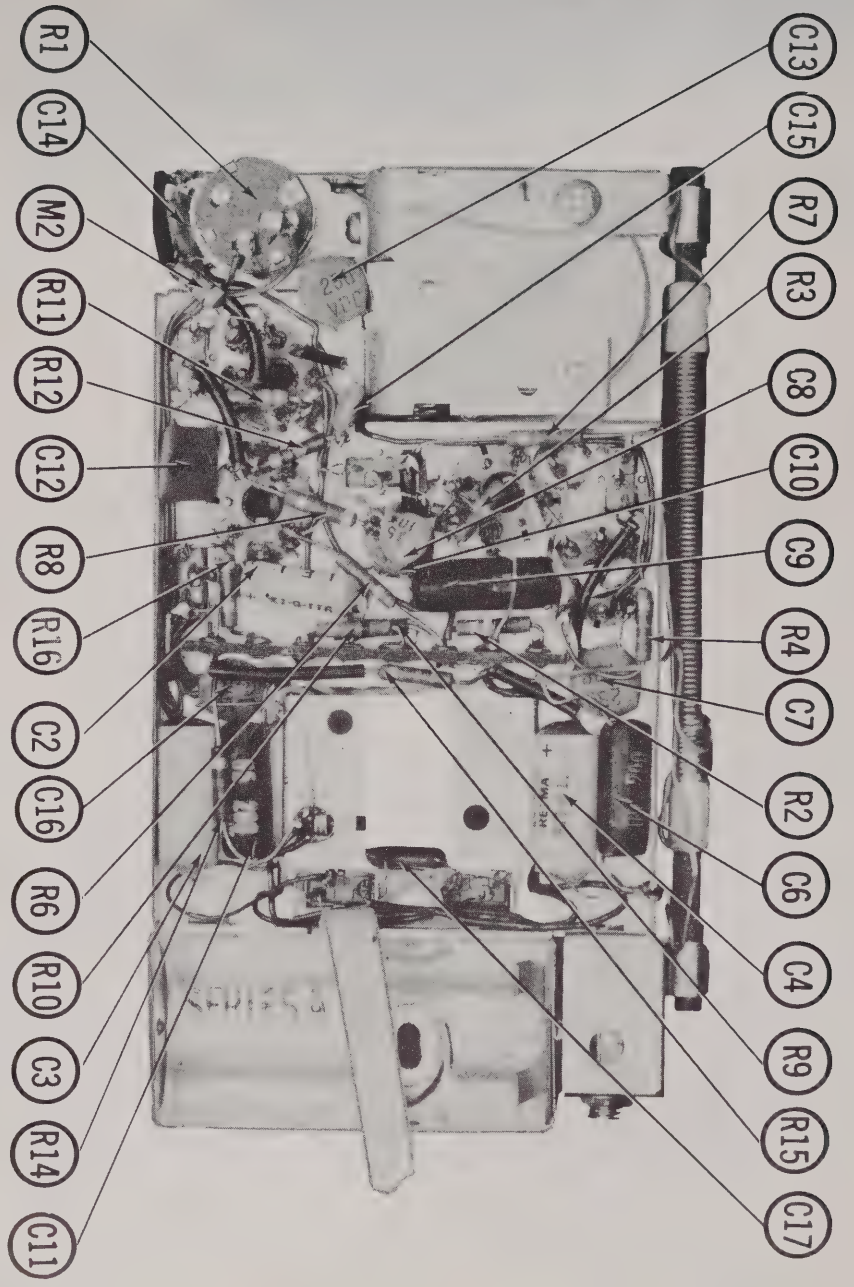
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

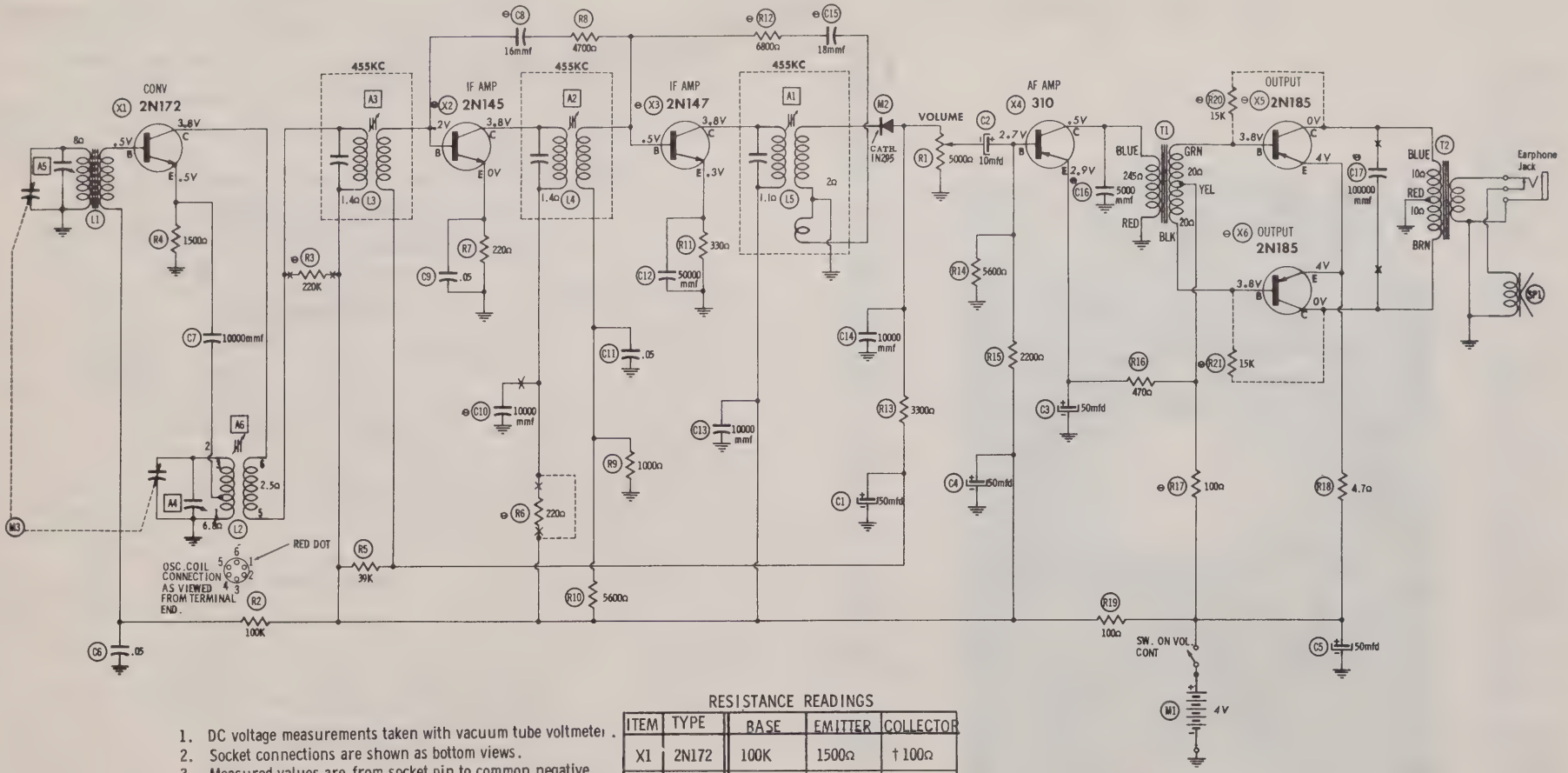
NAME	PART NO.	DESCRIPTION
Knob	140773-2	On-Off-Volume
Tuning Dial	140772-2	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N172	100K	1500Ω	†100Ω
X2	2N145	6000Ω	220Ω	†320Ω
X3	2N147	800Ω	330Ω	†100Ω
X4	310	3000Ω	†570Ω	245Ω
X5	2N185	†120Ω	†4.7Ω	10Ω
X6	2N185	†120Ω	†4.7Ω	10Ω

RESISTANCE MEASUREMENTS TAKEN WITH TRANSISTORS REMOVED
† MEASURED FROM POSITIVE TERMINAL OF C5

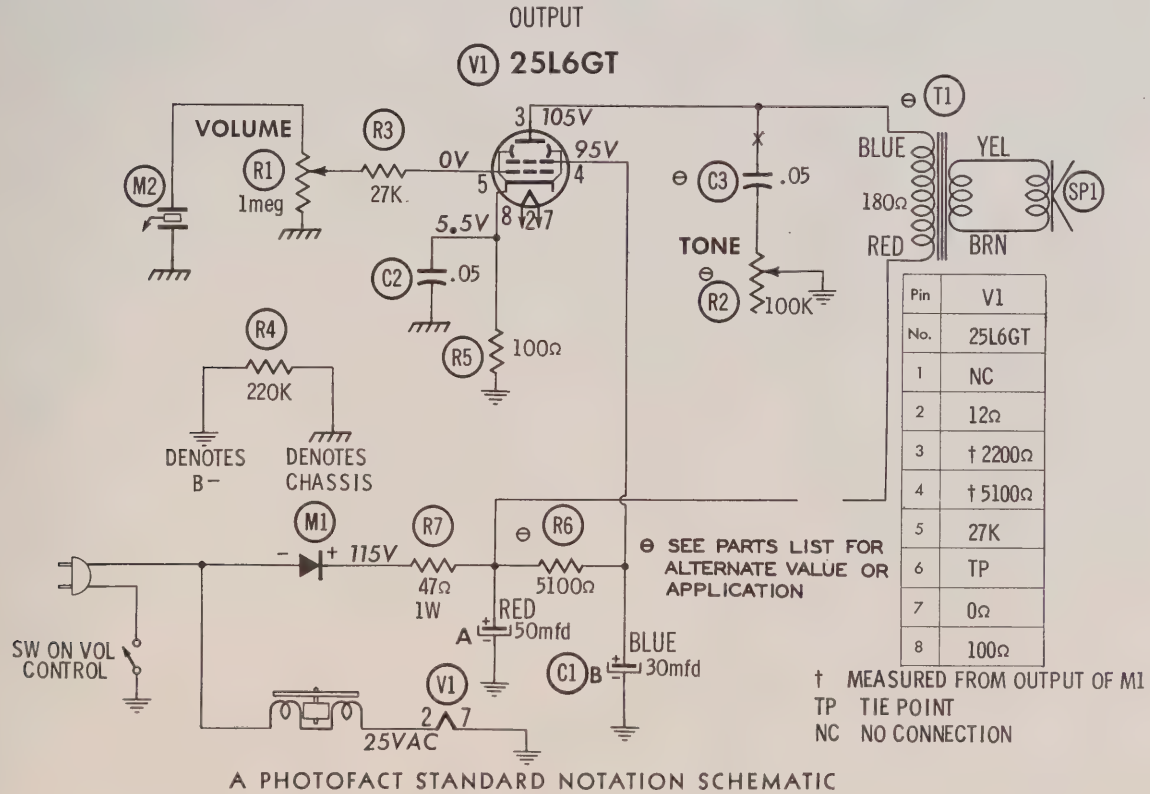
PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STEELMAN MODELS 4D15, 4D17, 4D18

STEELMAN MODELS
4D15, 4D17, 4D18

TRADE NAME	Steelman Models 4D15, 4D17, 4D18
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N. Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Manual Record Player
TUBES (One)	Type 25L6GT Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .41 Amp. @ 117 Volts AC (45 Watts With Motor)



Pin No.	V1 25L6GT
1	NC
2	12Ω
3	† 2200Ω
4	† 5100Ω
5	27K
6	TP
7	0Ω
8	100Ω

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25L6GT	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	582006	PRS150V5030	BBRD5315	TCD497	TDLD-8	FMD-301	TVA-2450
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400		BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C3	.05	200		BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	①

① Not used in some versions

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	360081	B-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R2A	100K	½	360050	B-41	A47-100K-Z	Q13-128	U39	Tone, Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

Note 1. Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	STEELMAN PART No.	NOTES
R3	27K			
R4	220K			
R5	100Ω			

ITEM No.	RATING OHMS	RATING WATT	STEELMAN PART No.	NOTES
R6	5100Ω			Note 1
R7	47Ω	1		

Note 1. Some versions may use 4700Ω in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2250Ω	3-4Ω	430221	Z1101	A-3025	A-3332	26S58 ①	S-12X	① Drill new mounting hole.
	2250Ω	1.6Ω	430260 ②						② Alternate Part Number.

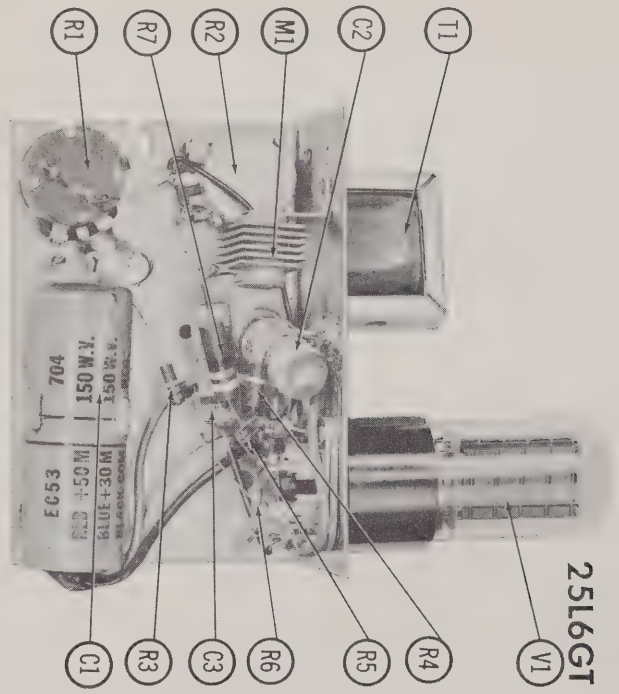
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA STEELMAN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	404001	4A07	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA STEELMAN PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.054A	380001	1002A	RS065	65	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA STEELMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	322503	420TS	N8-1 & N8-3			* Tone arm complete with cartridge.
		* P-310-2				

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA STEELMAN PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	329307 (78RPM)	† CRA-55 or ♦ CRA-55D	† 64S or ♦ 64D	† Jewel ♦ Diamond
	329107 (16-33-45RPM)	† CRA-55LP or ♦ CRA-55LPD	† 64MGS or ♦ 64MGD	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

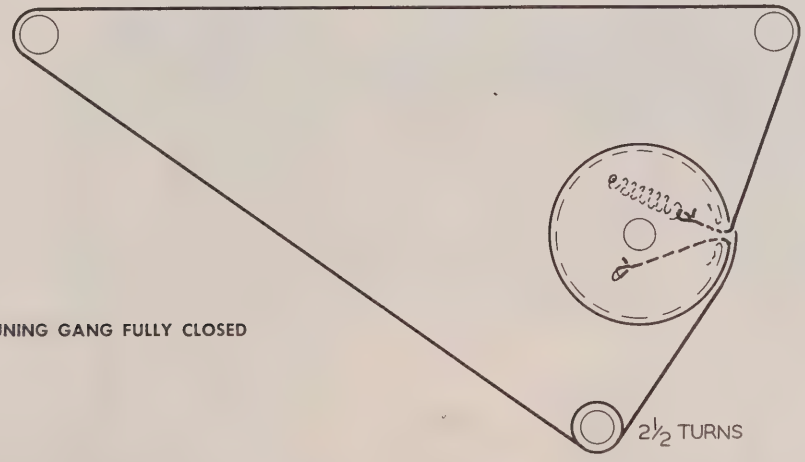
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STROMBERG-CARLSON
MODEL SR-402

STROMBERG-CARLSON
MODEL SR-402

STROMBERG-CARLSON
MODEL SR-402

TRADE NAME	Stromberg-Carlson Model SR-402	
MANUFACTURER	Stromberg-Carlson Co., Service Dept., 1700 University Ave., Rochester 10, N. Y.	
TYPE SET	AC Operated FM-AM Tuner	
TUBES	Fourteen	
POWER SUPPLY	105-125 Volts AC-50/60 Cycles	RATING .47Amp. @ 117 Volts AC (49 Watts)
TUNING RANGE-BROADCAST 540-1600KC		FREQ. MOD. 88-108MC



TUNING GANG FULLY CLOSED

DIAL CORD STRINGING

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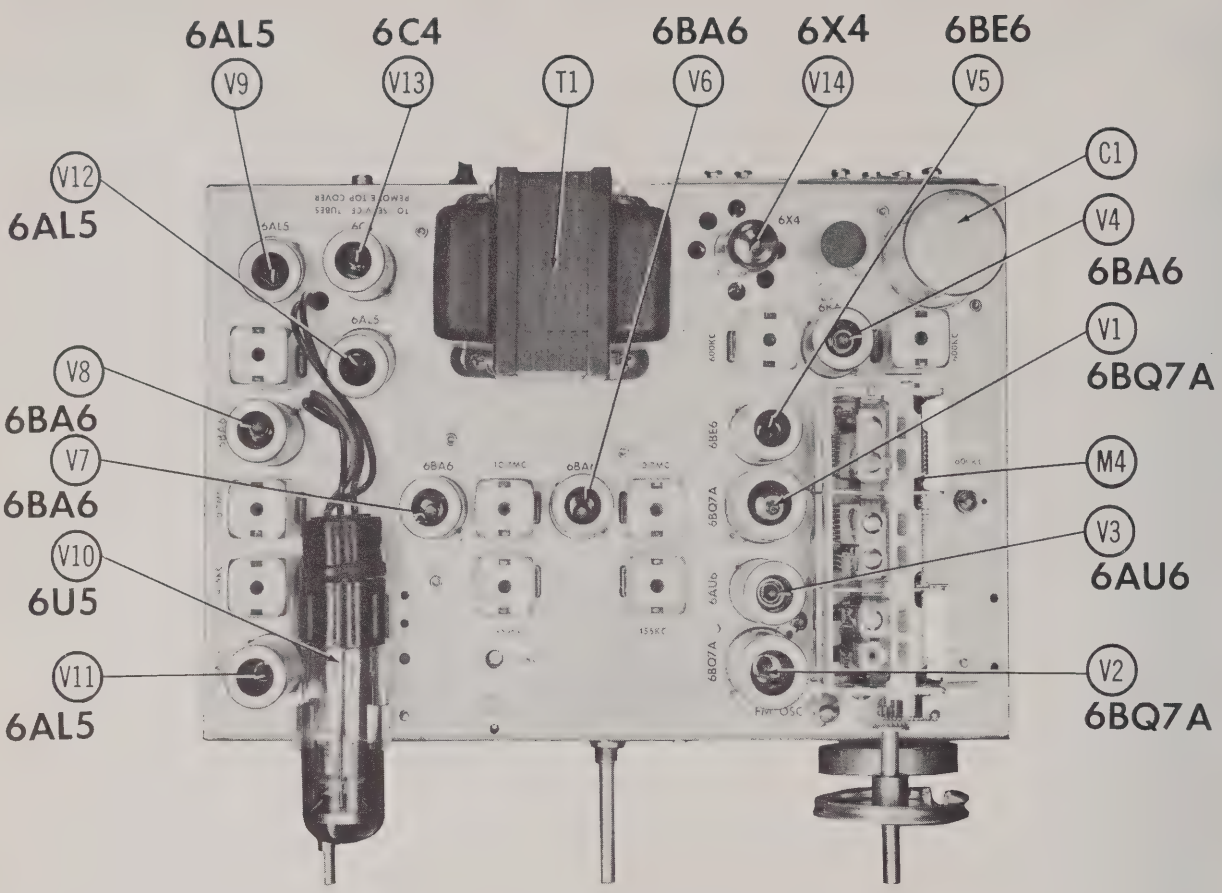
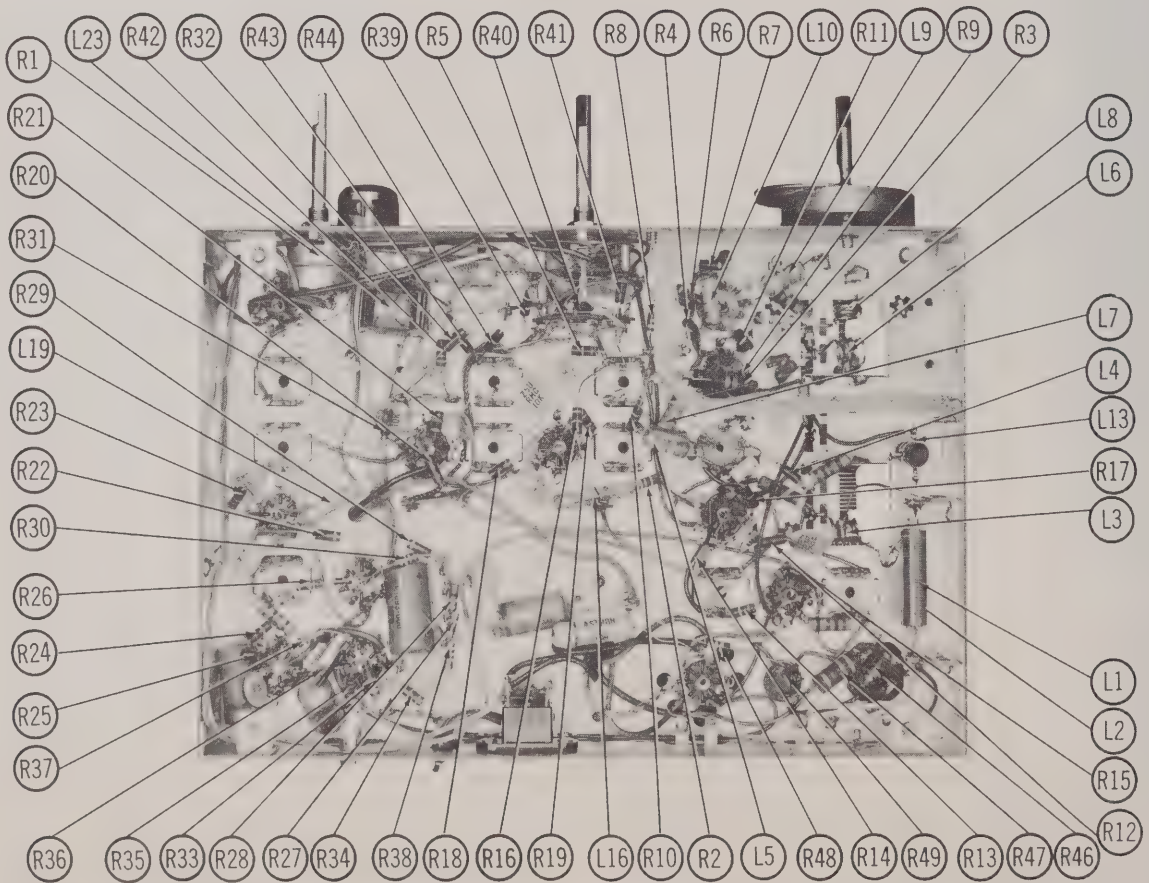
H236

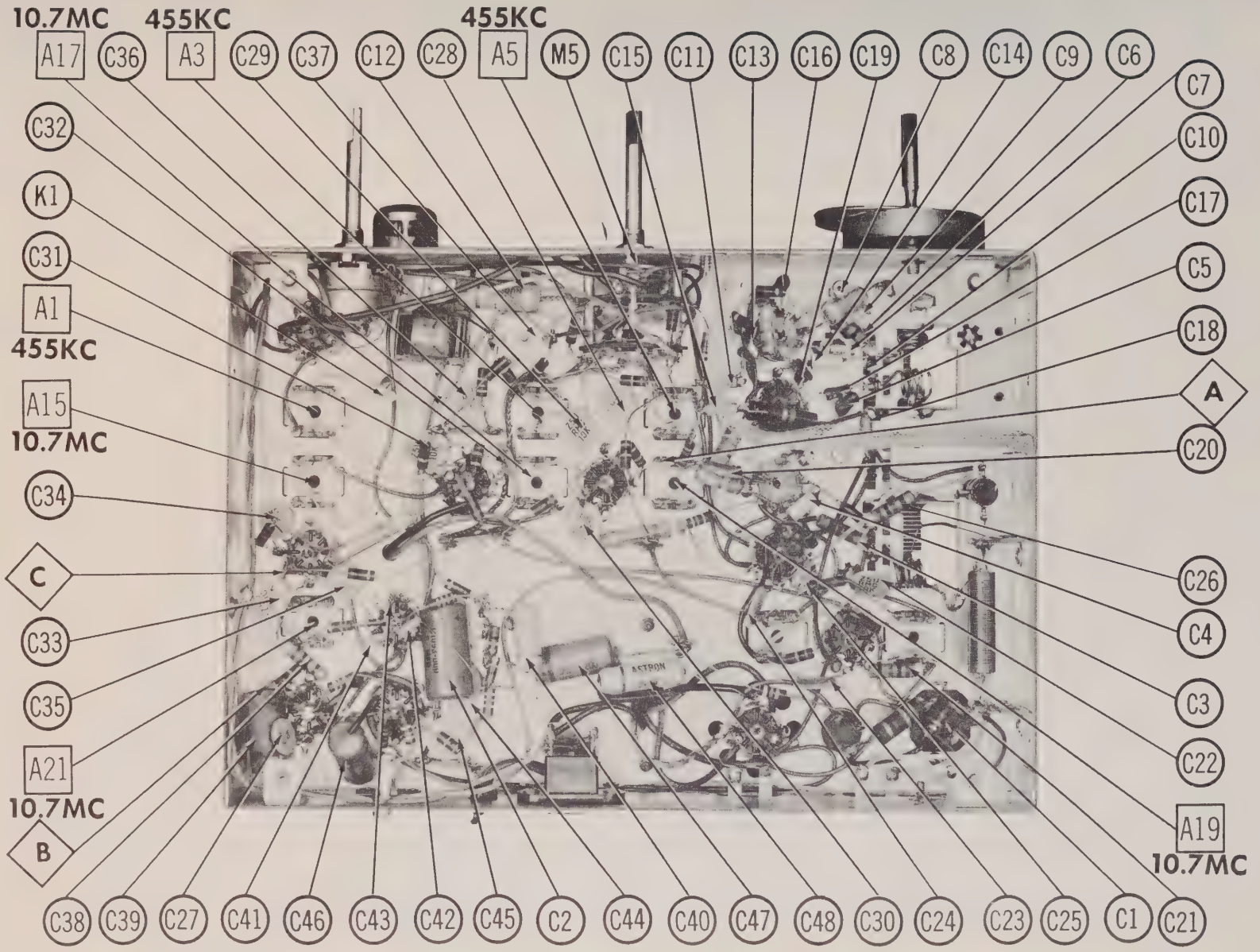
SET 395 FOLDER 17



CHASSIS TOP VIEW - TUBE IDENTIFICATION

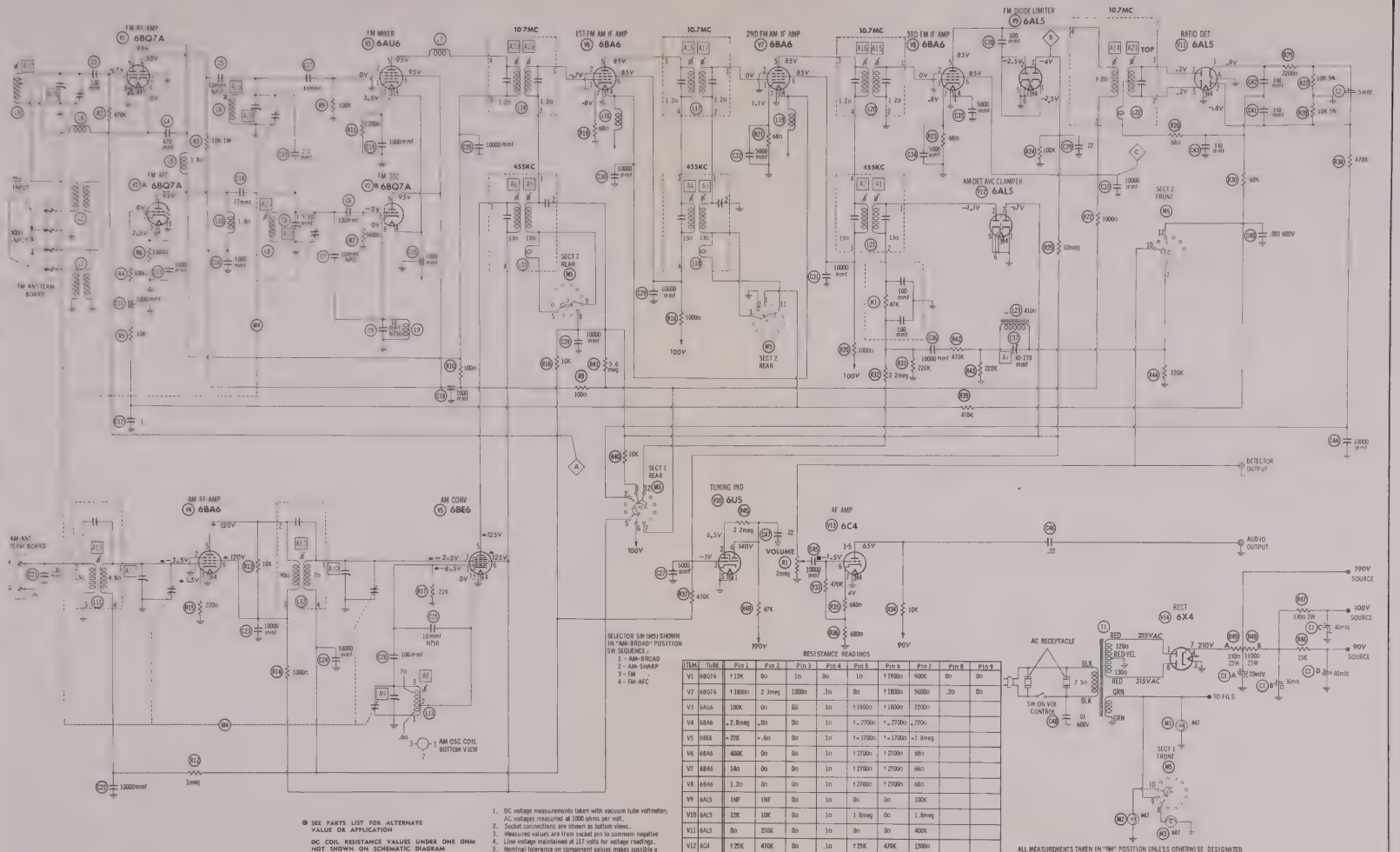


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

STROMBERG-CARLSON
MODEL SR-402



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	↑12K	0Ω	1Ω	0Ω	1Ω	↑1900Ω	400K	0Ω	0Ω
V2	6BQ7A	↑1800Ω	2.3meg	1000Ω	.1Ω	0Ω	↑1800Ω	5600Ω	.2Ω	0Ω
V3	6AU6	100K	0Ω	∞	1Ω	↑1900Ω	↑1800Ω	2200Ω		
V4	6BA6	2.8meg	.0Ω	0Ω	1Ω	↑.2700Ω	↑.2700Ω	.270Ω		
V5	6BE6	22K	.6Ω	0Ω	1Ω	↑.1700Ω	↑.1700Ω	.1.8meg		
V6	6BA6	400K	0Ω	0Ω	1Ω	↑2700Ω	↑2700Ω	68Ω		
V7	6BA6	1Ω	0Ω	0Ω	1Ω	↑2700Ω	↑2700Ω	68Ω		
V8	6BA6	1.2Ω	0Ω	0Ω	1Ω	↑2700Ω	↑2700Ω	68Ω		
V9	6AL5	INF	INF	0Ω	1Ω	0Ω	0Ω	100K		
V10	6AL5	12K	10K	0Ω	1Ω	1.8meg	0Ω	1.8meg		
V11	6AL5	0Ω	220K	0Ω	1Ω	0Ω	0Ω	400K		
V12	6C4	↑25K	470K	0Ω	.1Ω	↑25K	470K	1300Ω		
V13	6X4	120Ω	NC	0Ω	.1Ω	NC	130Ω	20K(min)		
V14	6B5	.1Ω	↑2.2meg	700K	↑47K	0Ω	0Ω			

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
* MEASURED IN "AM" POSITION
* MEASURED FROM PIN 7 OF V12
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

395-17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS

Volume control should beat maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning gang fully closed and set pointer to left edge of "55" on dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	455KC (Unmod)	AM (Sharp)	Point of non-interference. Low freq. end.	DC probe to point (A). Common to Chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	.1mfd	High side to pin 1 (grid) of 6BA6 (V7). Low side to chassis.	455KC (10KC Mod)	AM (Sharp)	Point of non-interference. Low freq. end.	AC VTVM Across detector output jack	A7	Adjust for MIMIMUM deflection.
3.	200mmf	Across AM Antenna terminals.	600KC (Unmod)	AM (Sharp)	600KC	DC probe to point (A) Common to Chassis	A8	Adjust for maximum deflection.
4.	200mmf	Across AM Antenna terminals.	1400KC	AM (Sharp)	1400KC	DC probe to point (A) Common to Chassis	A9, A10, A11	Adjust for maximum deflection.
5.	200mmf	Across AM Antenna terminals.	600KC	AM (Sharp)	600KC	DC probe to point (A) Common to Chassis	A8, A12, A13	Adjust for maximum deflection. Repeat steps 3 and 4 until no further improvement is noted.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.1mfd	High side to pin 1 (grid) of 6AU6 (V3). Low side to chassis.	10.7MC (Unmod.)	FM (No AFC)	100MC	DC probe to point (B) thru 10K. Common to chassis.	A14, A15 A16, A17 A18, A19 A20	Adjust for maximum deflection. Unshielded generator lead should not exceed 2".
7.	.1mfd	High side to pin 1 (grid) of 6AU6 (V3). Low side to chassis.	10.7MC (Unmod.)	FM (No AFC)	100MC	DC probe to Detector output jack. Common to chassis.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450 KC sweep. Use 120% sawtooth voltage in scope for horizonial deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	.1mfd	High side to pin 1 (grid) of 6AU6 (V3). Low side to chassis.	10.7MC (450KC SWP)	FM (No AFC)	100MC	Vert. Amp. to point (C) thru .01mfd. Low side to chassis.	A14, A15 A16, A17 A18, A19 A20	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1. Unshielded generator lead should not exceed 2".
7.	.1mfd	High side to pin 1 (grid) of 6AU6 (V3). Low side to chassis.	10.7MC (450 KC SWP)	FM (No AFC)	100MC	Vert. Amp. to point (C) thru .01mfd. Low side to chassis.	A21	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2 SLIGHTLY retouch A 14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	2 120Ω Carbon resistors	Across FM Antenna terminals.	100MC (22.5 KC SWP)	FM (No AFC)	100MC	DC probe to point (A). Common to chassis.	A22, A23, A24	Adjust for maximum deflection.
9.	2 120Ω Carbon resistors	Across FM Antenna terminals.	100MC (22.5KC SWP)	FM (No AFC)	See Remarks	DC probe to point (A). Common to chassis.	L3, L6, L8	Check calibration and sensitivity at 108MC, 106MC, 90MC, and 88MC. If variation is excessive, adjust L3, L6, and L8 for maximum deflection by compressing or expanding coil turns. Repeat steps 8 and 9 for proper tracking.

FIG. 1

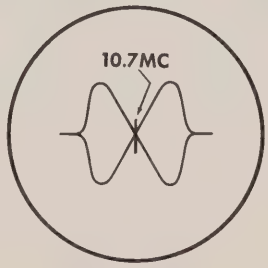


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6BQ7A	
V2	FM Osc. -FM AFC	6BQ7A	
V3	FM Mixer	6AU6	
V4	AM RF Amplifier	6BA6	
V5	AM Converter	6BE6	
V6	1st FM-AM IF Amplifier	6BA6	
V7	2nd FM-AM IF Amplifier	6BA6	

ITEM No.	USE	TYPE	NOTES
V8	3rd FM IF Amplifier	6BA6	
V9	FM Diode Limiter	6AL5	
V10	Tuning Indicator	6U5	
V11	Ratio Detector	6AL5	
V12	AM Det-AVC Clamper	6AL5	
V13	AF Amplifier	6C4	
V14	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

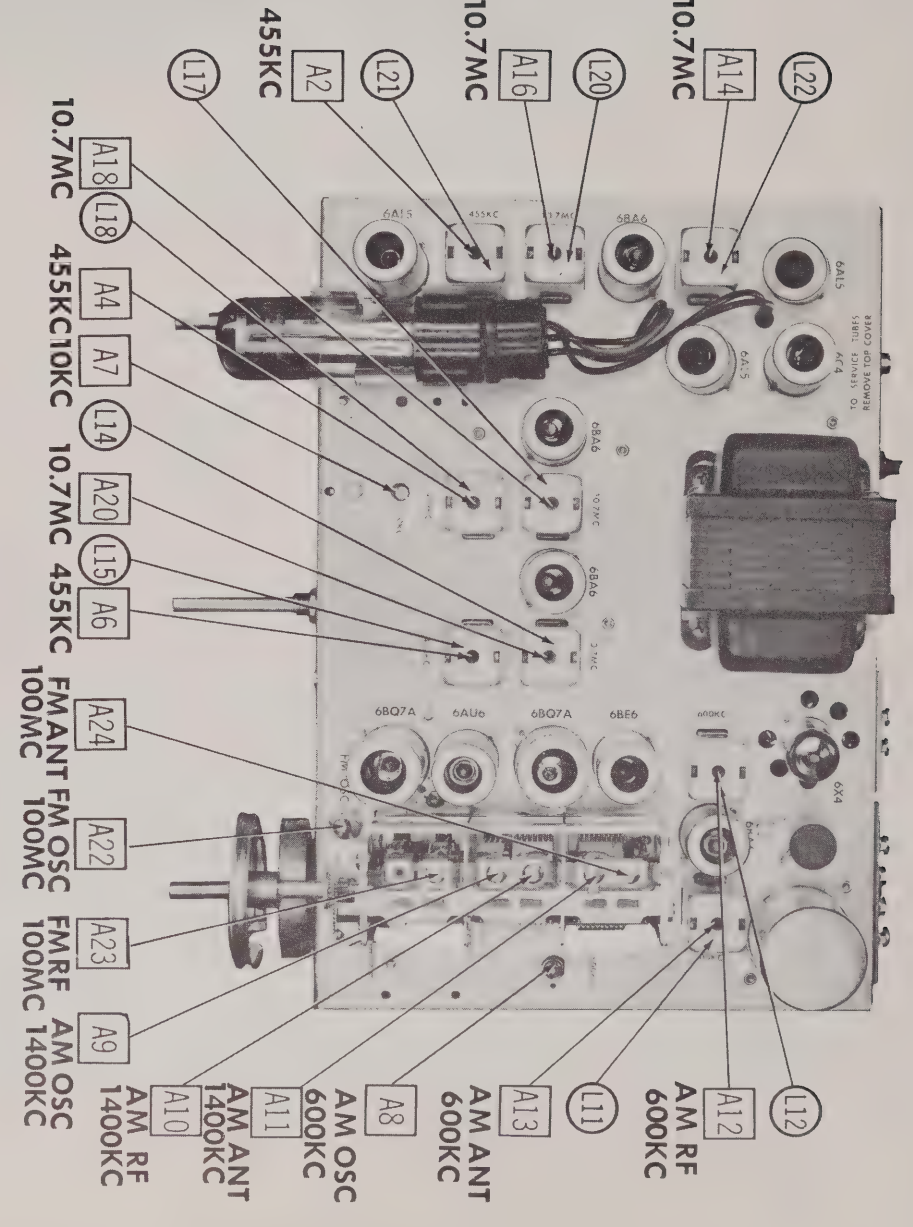
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬ 20	250	111625	AFH4-02-10	D0022	FP419.5		T-085	TVL-4580
B	■ 30	250						MTD-4530	
C	▲ 40	200							
D	40	200							
C2	5	50		PRS50V5	BBR5-50	TC30	TD-5-50	MMT-0505	TVA-1303

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	100			SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C4	470			SI470	D6-471	LT6T47	GP-470	UC-5347	5GA-T47	
C5	10			NP0-SI10	TCZ-10	CTA6Q1C	TC0-10	ZT-541	5TCC-Q1	NP0
C6	100			SI100	D6-101	LT6-T1	GP-100	UC-531	5GA-T1	
C7	10			NP0-SI10	TCZ-10	CTA6Q1C	TC0-10	ZT-541	5TCC-Q1	NP0
C8	1.5-10		110853		829-10					
C9	10			N750-SI10	TCN-10	CTA6Q1U	TC7-10	NT-541	5TCU-Q1	N750
C10	2.2			NP0-SI2.2	TCZ-2R2	C10V22C	TC0-2.2		5TCCB-V22	
C11	1000			EF-001	MFT-1000				503C-D1	
C12	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C13	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C14	27			SI27	D6-270	LT6Q27	GP-27	UC-5427	5GA-Q27	
C15	1000			EF-001	MFT-1000				503C-D1	
C16	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C17	33			SI33	D6-330	LT6Q33	GP-33	UC-5433	5GA-Q33	
C18	1000			EF-001	MFT-1000				503C-D1	
C19	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C20	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C21	100			SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C22	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C23	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C24	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C25	10			N750-SI10	TCN-10	CTA6Q1U	TC7-10	NT-541	5TCU-Q1	N750
C26	100			SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C27	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C28	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C29	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C30	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C31	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C32	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C33	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C34	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C35	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C36	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C37	30-270		110056							
C38	100			SI100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C39	.22	200		P288N-22		CUB2P22		GEM-2022	2TM-P22	
C40	.001	600		P688N-001	D6-102	CUB6D1	GP-1000	GEM-621	6TM-D1	
C41	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C42	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C43	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C44	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C45	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C46	.22	200		P288N-22		CUB2P22		GEM-2022	2TM-P22	
C47	.22	200		P288N-22		CUB2P22		GEM-2022	2TM-P22	
C48	.01	600		P688N-01	D6-103	CUB6S1	ED-01	GEM-611	6TM-S1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	145647	B-75	A47-2meg-Z		U55	Volume
B	Shaft			Not Req.	FS-3		Not Req.	
C	Switch			KB-1	SWE-12		US-26	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R2	470K			
R3	10K	1		
R4	100Ω			
R5	10K			
R6	1000Ω			
R7	5600Ω			
R8	100Ω			
R9	100K			
R10	100Ω			
R11	2200Ω			
R12	1meg			
R13	10K			
R14	1000Ω			
R15	220Ω			
R16	10K			
R17	22K			
R18	1000Ω			
R19	68Ω			
R20	1000Ω			
R21	68Ω			
R22	1000Ω			
R23	68Ω			
R24	100K			
R25	10Meg			
R26	68Ω			

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R27	10K 5%			
R28	10K 5%			
R29	2200Ω			
R30	68K			
R31	220K			
R32	2.2meg			
R33	470K			
R34	10K			
R35	680Ω			
R36	680Ω			
R37	470K			
R38	470K			
R39	470K			
R40	10K			
R41	5.6meg			
R42	470K			
R43	220K			
R44	220K			
R45	2.2meg			
R46	15K			
R47	330Ω	2		
R48	47K			
R49A	330Ω	25	149626	
B	1100Ω	25		

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .47A	420VCT @ .050A	6.3V @4.5A		161127					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Trans.	114189	15-1082	TV-172		
L2	FM Ant. Trans.	114189	15-1082	TV-172		
L3	FM Ant. Coil	114191				
L4	Neutr. Coil	114193				1.8 Microhenries
L5	RF Choke	114693	19-1002	BC-563	4606	2.2 Microhenries; IRC Part #CLA
L6	FM RF Coil	114191				
L7	RF Choke	114729			4588	.47 Microhenries; IRC Part # CLA
L8	FM Osc. Coil	114190				
L9	RF Choke	114729			4588	.47 Microhenries; IRC Part # CLA
L10	RF Choke	114693	19-1002	BC-563	4606	2.2 Microhenries; IRC Part # CLA
L11	AM Ant. Trans.	114192				
L12	AM RF Trans.	114475				
L13	AM Osc. Coil	114188				
L14	1st FM IF	114363	16-3487	FM-254	1463	
L15	1st AM IF	114469				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L16	Fil. Choke	114707			4588	.47 Microhenries; IRC Part # CL-1
L17	2nd FM IF	114363	16-3487	FM-254	1463	
L18	2nd AM IF	114469				
L19	Fil. Choke	114707			4588	.47 Microhenries; IRC Part # CL-1
L20	3rd FM IF	114363	16-3487	FM-254	1463	
L21	3rd AM IF	114468	16-6758	BC-353	12-C2	
L22	Ratio Det.	114467	17-3498	FM-255	1465	

10KC FILTER

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	0A	410Ω	1HY	161129 ①					

① Alternate Part #153005 and 161004

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Stromberg-Carlson PART No.	REPLACEMENT DATA	
K1	Diode RF Filter	100mmf, 100mmf, 47K	110478	Aerovox	PA-97-1
				Centralab	PC50
				Cornell-Dubilier	111TM-1
				Erie	1403-01
				Sprague	D-1

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M1	Dial Lamp		#47
M2	Dial Lamp		#47
M3	Dial Lamp		#47
M4	Tuning Cap	110060	6 Gang (AM Sections: Ant. 20-450mmf, RF10-365mmf, Osc. 12-130mmf)
M5	Switch	158688	Selector (Rotary Wafer Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Escutcheon	125634	Dial
Knob	134300	On-Off-Volume and Tuning (Plain)
Knob	134301	Selector (With Dot)
Knob	134307	On-Off-Volume and Tuning (Plain) Used in series 103 and later.
Knob	134306	Selector (With Dot) Used in series 103 and later
Dial Glass	122603	
Dial Pointer	144603	

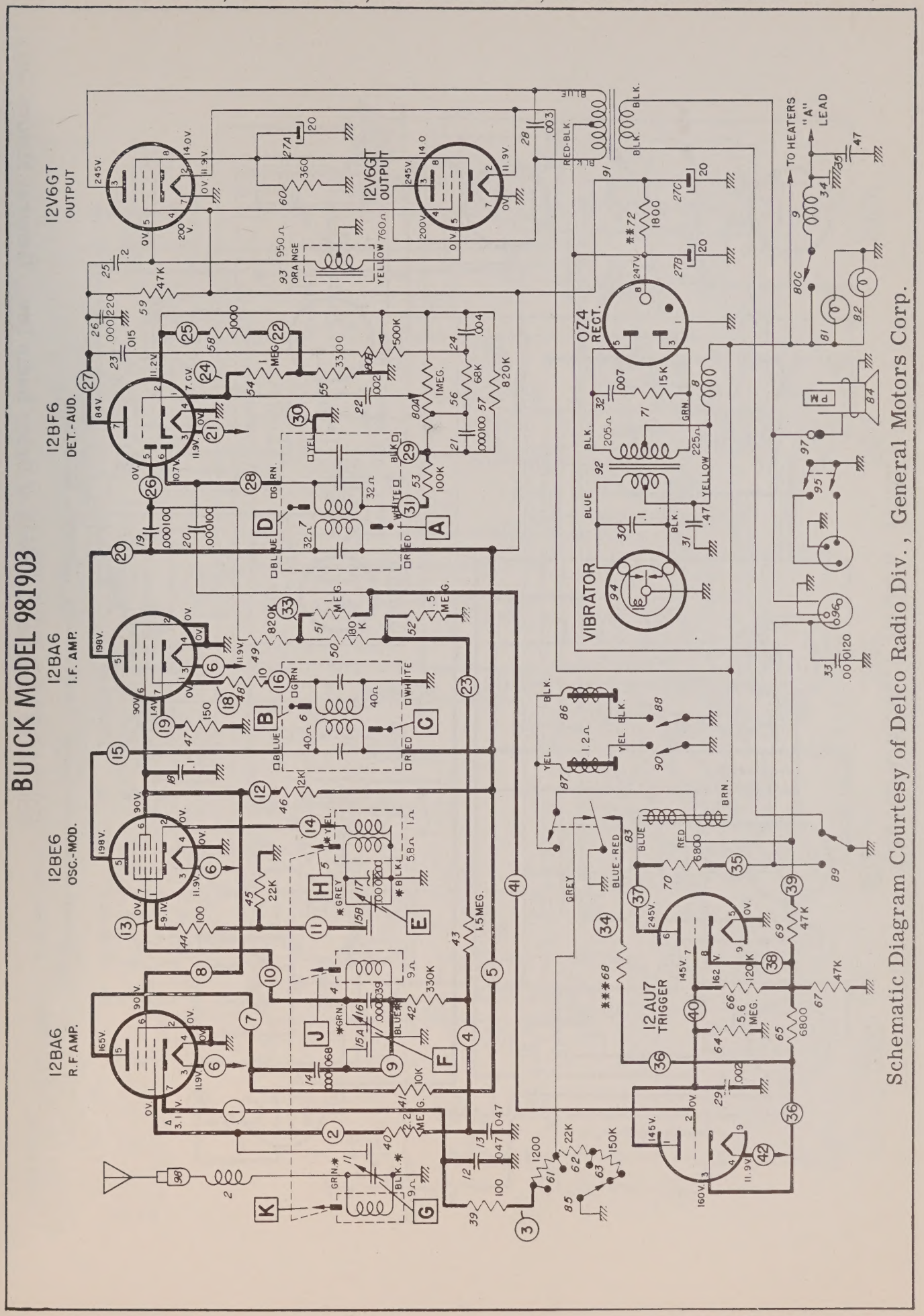
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

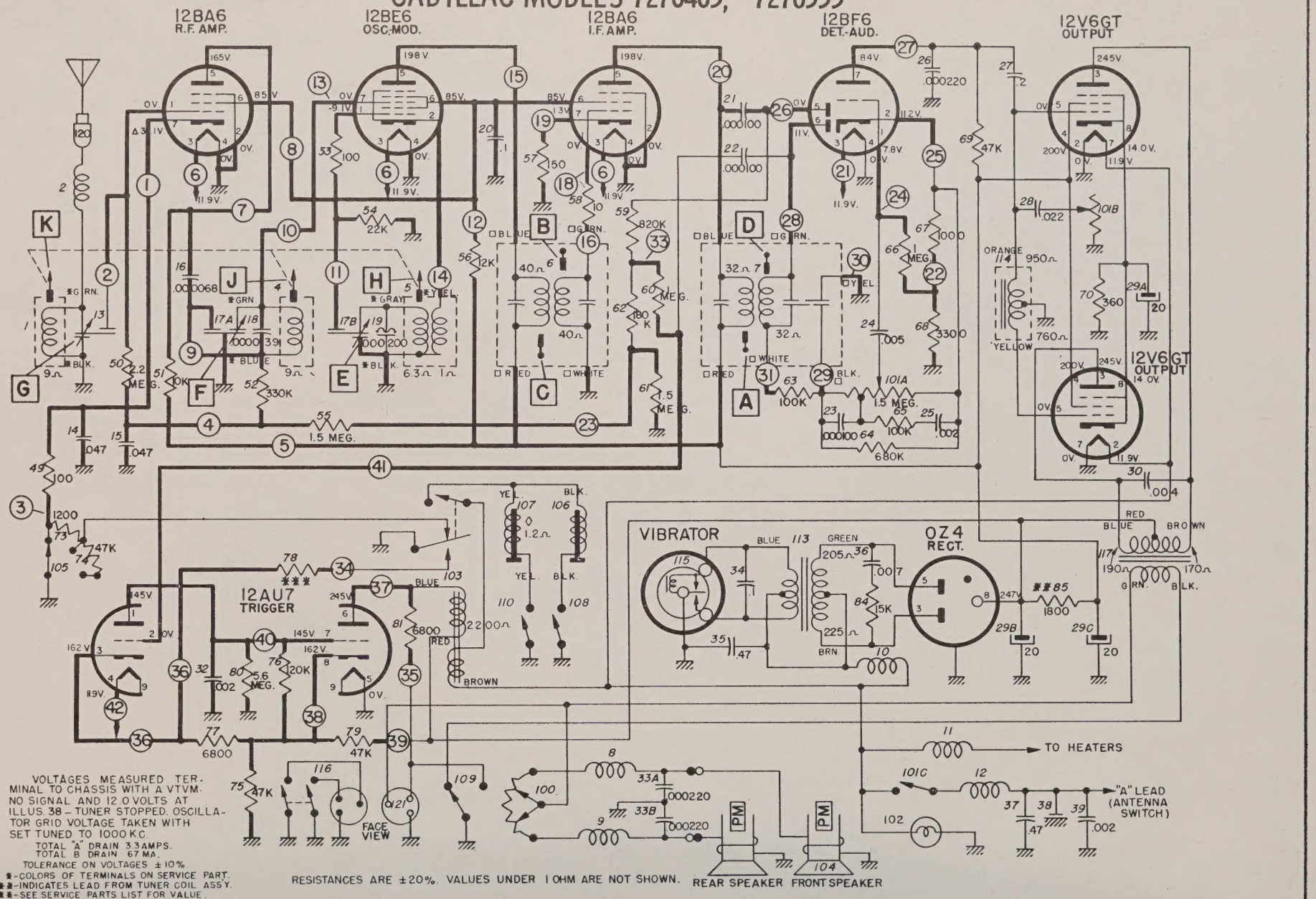
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)


BUICK MODEL 981903
12V6GT OUTPUT
12V6GT OUTPUT
12BF6 DET.-AUD.
12BA6 I.F. AMP.
12BE6 OSC.-MOD.
12BA6 R.F. AMP.
12AU7 TRIGGER
0Z4 RECT.
VIBRATOR
TO HEATERS "A" LEAD
Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.

CADILLAC MODELS 7270405, 7270555



VOLTAGES MEASURED TERMINAL TO CHASSIS WITH A VTVM. NO SIGNAL AND 12.0 VOLTS AT ILLUS. 38 – TUNER STOPPED. OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000 KC.
TOTAL "A" DRAIN 3.3 AMPS.
TOTAL B DRAIN 67 MA.
TOLERANCE ON VOLTAGES ± 10%

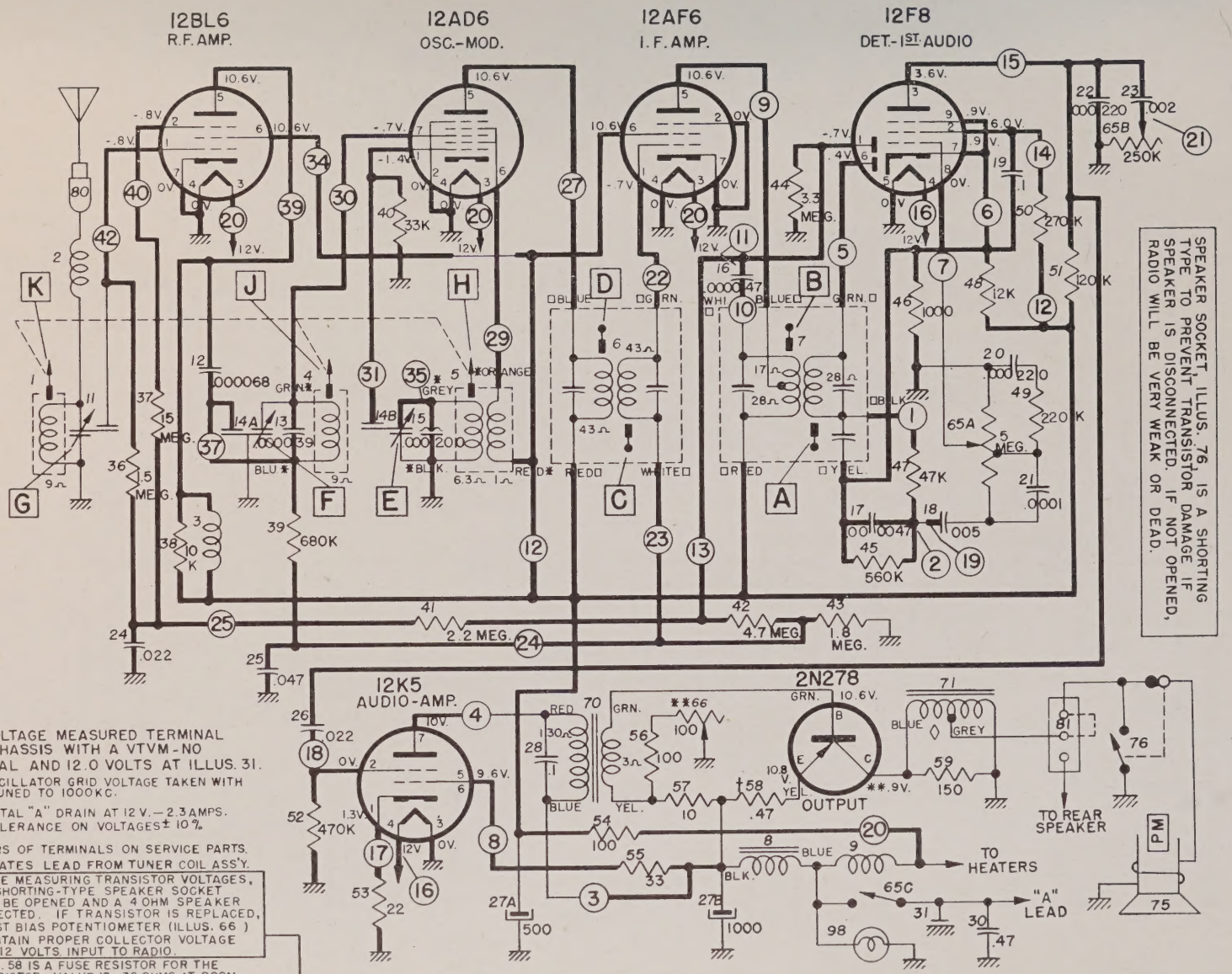
*-COLORS OF TERMINALS ON SERVICE PART.
**-INDICATES LEAD FROM TUNER COIL ASS'Y.
***-SEE SERVICE PARTS LIST FOR VALUE.
□-SEE SERVICE PARTS LIST FOR REPLACEMENT.
Δ-VOLTAGES TAKEN WITH SENSITIVITY CONTROL IN CENTER POSITION.

RESISTANCES ARE ±20%. VALUES UNDER 1 OHM ARE NOT SHOWN.

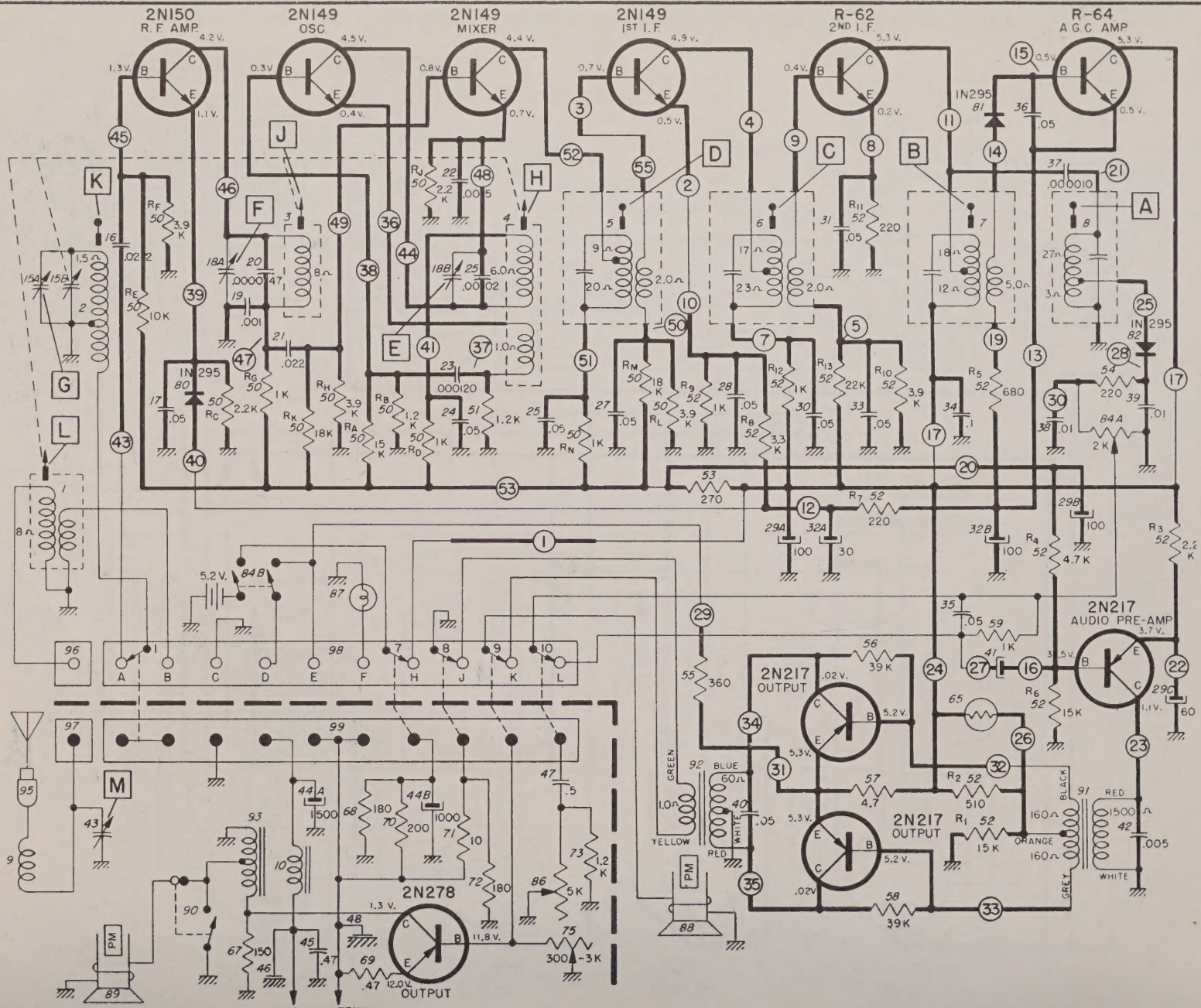
◊-SOLENOID RESISTANCE INCREASES WITH TEMPERATURE DURING OPERATION

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.

OLDSMOBILE MODEL 989127


12BL6
R.F. AMP.
12AD6
OSC.-MOD.
12AF6
I.F. AMP.
12F8
DET.-1ST AUDIO
12K5
AUDIO-AMP.
2N278
OUTPUT
SPEAKER SOCKET, ILLUS. 76, IS A SHORTING TYPE TO PREVENT TRANSISTOR DAMAGE IF SPEAKER IS DISCONNECTED. IF NOT OPENED, RADIO WILL BE VERY WEAK OR DEAD.
VOLTAGE MEASURED TERMINAL TO CHASSIS WITH A VTVM - NO SIGNAL AND 12.0 VOLTS AT ILLUS. 31.
OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000KC.
TOTAL "A" DRAIN AT 12 V. — 2.3 AMPS.
TOLERANCE ON VOLTAGES ± 10%
□ — COLORS OF TERMINALS ON SERVICE PARTS.
* — INDICATES LEAD FROM TUNER COIL ASS'Y.
** — BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING-TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 66) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.
† — ILLUS. 58 IS A FUSE RESISTOR FOR THE TRANSISTOR. VALUE IS .36 OHMS AT ROOM TEMPERATURE. SEE PAGE 2 AND 4 FOR INSTRUCTIONS.
◊ — OUTPUT TRANSFORMER MAY APPEAR TO BE SHORTED IF SHORTED-TYPE SPEAKER SOCKET IS NOT HELD OPEN, NORMAL RESISTANCE IS 1-2 OHMS.
IMPORTANT
RESISTANCE VALUES ON COIL ± 20%. VALUES UNDER ONE OHM ARE NOT SHOWN
TO HEATERS
"A" LEAD
TO REAR SPEAKER
PM

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.



PONTIAC MODEL 988837

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.